

Introduction and Methodology

Microchip Technology Incorporated's (Microchip) semiconductor devices are assembled at our assembly facility outside Bangkok, Thailand, and by subcontracted assembly sites throughout the world. Frequently, the qualified Bill of Materials (BOM) will vary among assembly sites for a given package configuration. The majority of variation lies in the mold compound and/or the internal die attach material used. The semiconductor device material data presented is calculated using a mass balance methodology for the primary qualified assembly site or the most commonly produced BOM.

RoHS Recast or "RoHS2:

Microchip semiconductor products or devices still fall under the same conditions they were under the old RoHS declarations. Piece parts are still not classified as EEE. Microchip's plastic semiconductor products are still approved for RoHS required designs without exemption. All Ceramic packaged products still contain Pb (lead) and are not recommended for RoHS required applications. FET/PDFN packages utilize EU exemption 7(a) - Pb (lead) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead).

Ozone Depleting Materials

Microchip Technology Incorporated's semiconductor devices neither contain nor are manufactured with Class I or Class II Ozone Depleting Chemicals ("ODCs"). For purposes of this document "ODCs" are those substances listed in 40CFR82A App A, and 40CFR82A App B, July 1, 2008.

Brominated Flame Retardant Polymers

Beginning 1 July 2009, Microchip production locations were qualified as Halogen-Free as defined per IEC 61249-2-21:2003: Bromine (Br) \leq 900 and Chlorine (Cl) \leq 900 ppm by homogeneous material weight. With total Bromine (Br) plus Chlorine (Cl) content \leq 1,500 ppm by homogeneous material weight. Additionally, Antimony Trioxide (Sb2O3) is less than 1,000 ppm.

Prior to July 2009, Microchip's semiconductor devices may have contained Antimony Trioxide, [Sb2O3] (CAS # 1309-64-4) and one of two brominated (Br/B08) phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8 used in the flame retardant system of the molding compounds. Neither of these brominated phenolic/epoxy polymers are regulated by European Union's REACH Directive. Microchip's semiconductor devices do not contain pentaBDE or octaBDE, two brominated flame retardants regulated by European Union Directive 2003/11/EC (6 February 2003).

Many of the mold compounds used by Microchip or its sub-contract assembly houses contained one of two brominates phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8. Neither of these brominated phenolic/epoxy polymers are regulated by European Union Directive REACH Directive. Microchip's semiconductor devices **do not** contain pentaBDE or octaBDE, two

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brominated flame retardants regulated by European Union Directive 2003/11/EC (6 February 2003).

Substances of Concern

Microchip's semiconductor products may contain Nickel (Ni) in one or more of three applications:

- Nickel is one of the three plating materials used on the pins of the semiconductor, hence, the term Nickel (Ni) / Palladium (Pd) / Gold (Au) pin finish. The plating order is determined by the physical properties (adhesiveness) between each substance; Copper to Nickel to Palladium to Gold. Gold is the outer most substance, forming a shield around the Nickel and protecting against skin contact;
- Nickel is an alloying element in three lead frame alloys used by Microchip C194, C7025, and A42; and
- Nickel may be impurity in the matte tin plating.

Each occurrence is compliant with EU Directive 94/27/EC. Please consult the specific Material Content Declaration (MCD) for the estimated material content value.

The mold compounds used by Microchip and its sub-contract assembly houses to assemble Microchip's semiconductor devices **do not** contain inorganic particulate red phosphorous. Rather, prior to July 2009, diantimony trioxide was the primary inorganic flame retardant material in most mold compounds; one unique mold compound used a trade secret "metal hydroxide" instead of diantimony trioxide. Certain mold compounds **do not** contain an inorganic flame retardant.

Absence of Chemical Substances

If a chemical substance is absent from the spreadsheet reflecting its Bill of Materials at specific assembly site, its absence from the chemical substance list(s) means:

- The chemical substance is NOT an intentional ingredient in the semiconductor device; and
- To the best of Microchip's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, <u>if any</u>, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Recyclate Information (IMDS Format)

Amount of contained recyclate – as released? 0%
Amount of contained recyclate – as measured? 0%
Amount of contained recyclate – post industrial recyclate? 0 g / 0%
Amount of contained recyclate – post consumer recyclate? 0 g / 0%

Joint Industry Guide No. JIG-101 Ed. 4.0

Microchip semiconductor products meet the requirements of the Consumer Electronics Association (CEA), DIGITALEUROPE, and Japanese Green

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Procurement Survey Standardization Initiative (JGPSSI) Joint Industry Guide - Material Composition Declaration for Electro technical Products - JIG-101 Ed. 4.0. This guide represents industry-wide consensus on the relevant materials and substances that shall be disclosed by suppliers when those materials and substances are present in products.

Implementation of copper wire bond

(PdCu) Palladium Copper Wire provides superior electrical performance over (Au) Gold Wire. Using PdCu wire provides a hedge on rising prices that can affect the supply of gold available for manufacturing. Therefore, PdCu wire helps ensure a steady supply of components that can support your ongoing business needs. It is Microchip's intent to convert all applicable products within the next 18 to 24 month. This switching of wire bond materials does not change the environmental compliance or reporting catogory of any product. To facilitate the ease of material content reporting to both our suppliers and customers during this transition, all transitioned Palladium Copper Wire packages the content is group together.

Microchip Technology Incorporated's General Statement of Warranty

Microchip accepts no duty to notify any user of updates or changes. Further, the exclusive, limited product warranties provided by Microchip Technology Inc. and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgements, and invoices. Microchip shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on this document. It is the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and any reasonable or foreseeable uses of the components or systems used or purchased.

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MICROCHIP Semiconductor Device To	ype: EB 03 (Lead) DDPA	AK (F4)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	544.12	(mg) Total	Mold Compound	% ot Total Weight	39.21
Fused Silica	60676-86-0	Mold Compound	34.505	478.823	345,048		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	1.274	17.684	12,743		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	1.176	16.324	11,763		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.764	24.485	17,645		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.098	1.360	980		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.392	5.441	3,921		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	58.494	811.716	584,936			Total	100.00	_
Tin	7440-31-5	Lead Frame	0.099	1.368	986	828.87	(mg) Total	Lead Frame	% of Total Weight	59.73
Silver	7440-22-4	Lead Frame	1.138	15.790	11,379		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.086	1.198	864		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.020	0.282	204		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.046	33		<u> </u>	Total	100.00	<u>u</u>
Silicon	7440-21-3	Chip (Die)	0.270	3.747	2,700	1.53	(mg) Total	Die Attach	% of Total Weight	0.11
Gold	7440-57-5	Wire Bond	0.070	0.971	700		Silver (Ag)	7440-22-4	79	1
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.610	8.465	6.100		Proprietary Resin	Trade Secret	19	
••••		TOTALS:	100.000	1,387.700	1,000,000	Prop	rietary Curing agent & Hard		3	
				,	, ,					41
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	2/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	3.75	Total (mg) Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	0.27
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the da	omply with EU Directive 2002 ria internal design controls, s emical substance is NOT an i ate of this document, there is	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devicency or conductor devicency or credible reason to believe that the unavoidable	e and, to the b	est of Microch	ip	3.75	Total (mg) Silicon			
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the de emical substance, if any, is not below the threshold of reg Iding compounds used by Microchip meet the UL94 V0 fla	omply with EU Directive 2002 ria internal design controls, semical substance is NOT an interest of this document, there is ulatory concern for any regular mability standard for plast	295/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable latory scheme world-wide.	e and, to the b	est of Microch	ip the	0.97		Chip (Die) 7440-21-3	% of Total Weight	
his semiconductor device and its homogenous materials of rective 2002/53/FC (End-of-Life Vehicles (ELV) Directive). In pullance with the above EU Directives has been verified value a chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the detentical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 Vo flatp://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp on and certain "reels" may be made from PVC plastic.	omply with EU Directive 2002 ria internal design controls, semical substance is NOT an interest of this document, there is ulatory concern for any regular mability standard for plast s/plastics/	295/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable latory scheme world-wide.	e and, to the b le impurity con ases to obtain a	est of Microch ncentration of a test report a	ip the		Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
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rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). In publiance with the above EU Directives has been verified vertical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the determical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flat p://ul.com/global/eng/pages/offerings/industries/chemical to protective "tubes" in which the specific product is shipp and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information evices in their original packing materials is true and correct arantee the completeness and accuracy of data in this form atterial suppliers. Supplier information is often protected from material suppliers. Supplier information is provided only as estimates estimates do not include trace levels of dopants, meta crochip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties.	omply with EU Directive 2002 ria internal design controls, so emical substance is NOT an interest of this document, there is interest of this document, or any regular mability standard for plast s/plastics/ and are made from polyvinyl in this form concerning substant to the best of its knowledge in because it has been compion disclosure as trade secretates of the average weight on alls, and non-metal materials arranty, express or implied, we porated and its subsidiaries and invoices. The property of the system of the information of the information of the system of the information of the informa	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable latory scheme world-wide. ics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technological and belief, as of the date listed in this form. Microchip databath of the thing of the date listed in Material Safets and some information may not have been provided the provided in Material Safets and some information may not have been provided the providence of the provided in Material Safets and some information devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and declarations and shall not be liable for any damage eclarations and shall not be liable for any damage	e and, to the b le impurity col ases to obtain a l to hold the pa ogy Incorpora ochip Technol ety Data Sheets vided by subco d significant to e finished parts colaration. The conditions of s es, direct or in	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem oxic metals co is.	the outer ductor tted cannot raw blers and mponents. ited e provided	0.97	Silicon (mg) Total Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	. 0.07

EB 3L DDPAK 7:04 PM : 8/8/2012

MICROCHIP Semiconductor Device	Type: FT 05/(cod) F	DDPAK (17)		nation Base A				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Ocimiconadator Device	Type: Li U3 (Lead) L	"Contained In"	% Total	1	1			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	526.92	(mg) Total	Mold Compound	% ot Total Weight	26.56
Fused Silica	60676-86-0	Mold Compound	23.373	463,693	233.728		Fused Silica	60676-86-0	88.00	Ī
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8.632		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7,968		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11,952		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.266	5.269	2,656		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	70.627	1401.171	706,271			Total	100.00	<u>-</u>
Tin	7440-31-5	Lead Frame	0.119	2.361	1,190	1430.79	(mg) Total	Lead Frame	% of Total Weight	72.12
Silver	7440-22-4	Lead Frame	1.374	27.257	13,739		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27			Total	100.00	_
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200	1.79	(mg) Total	Die Attach	% of Total Weight	0.09
Gold	7440-57-5	Wire Bond	0.040	0.794	400		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,983.900	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	1 9839	g Total Mass						Total	100.00	<u> </u>
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62
compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c echnology incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of re	hemical substance is NO date of this document, th	T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab				12.30	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	0.62
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a chemical substance is absent from the list above, the cechnology Incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of re tolding compounds used by Microchip meet the UL94 V0 fttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is ship ox and certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informatic evices in their original packing materials is true and corre uarantee the completeness and accuracy of data in this fonaterial suppliers. Supplier information is often protected aw material suppliers. Information is provided only as esti	hemical substance is NO date of this document, the equiatory concern for any flammability standard for als/plastics/ pped are made from poly on in this form concerning the best of its known because it has been of from disclosure as trade imates of the average we tals, and non-metal mate warranty, express or implorporated and its subsidiary.	T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databation of the complete of th	ases to obtain a I to hold the pa logy Incorporat ochip Technol ety Data Sheets vided by subcc di significant to e finished parts eclaration. The	a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos. exclusive, lim	the tt the outer ductor ated cannot raw blers and omponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.04
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ET 5L DDPAK 7:04 PM : 8/8/2012

MICROCHIP Semiconduster Device	Type: MC 08 (Lead) DFN			nation Base A				ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: MC U8 (Lead) DFN	,								es
		"Contained In"	% Total			7.49	(mg) Total	Mold Compound	% ot Total Weight	48
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.45	(3,			-
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.363	23,280	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212			Total	100.00	
Tin	7440-31-5	Lead Frame	0.114	0.018	1,140	7.11	(mg) Total	Lead Frame	% of Total Weight	45.6
Silver	7440-22-4	Lead Frame	0.869	0.136	8,687		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.082	0.013	821		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.187	0.029	1,872		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.043	0.007	432		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.005	0.001	48			Total	100.00	_
Heterocyclic organic compound	Trade Secret	Die Attach	0.005	0.001	48	0.04	(mg) Total	Die Attach	% of Total Weight	0.24
Silicon	7440-21-3	Chip (Die)	1.640	0.256	16,400		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.400	0.062	4,000		Acrylate resins Proprietary	Trade Secret	18	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4,120	0.643	41,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	15.600	1.000.000	Heter	ocyclic organic compound	Trade Secret	2	
	0.0156 a Tot				1,000,000		,	Total	100.00	
npliance with the above EU Directives has been verified	d via internal design controls, s	unnlier declarations and for analytical test data								
chnology Incorporated's knowledge and belief as of the	date of this document, there is	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidab					Doped Silicon	7440-21-3 Total	100 100.00	
chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL94 V0	e date of this document, there is regulatory concern for any regul flammability standard for plasti	ntentional ingredient in the semiconductor devic no credible reason to believe that the unavoidab atory scheme world-wide.	le impurity cor	ncentration of	the	0.06	Doped Silicon			
chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemice e protective "tubes" in which the specific product is shi	e date of this document, there is regulatory concern for any regul flammability standard for plasti cals/plastics/	ntentional ingredient in the semiconductor devic no credible reason to believe that the unavoidab atory scheme world-wide. ics. You can access the UL iQTM family of databa	le impurity cor	ncentration of a test report a	the t	0.06		Total	100.00	
a chemical substance is absent from the list above, the ochnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and corrarantee the completeness and accuracy of data in this fraterial suppliers. Supplier information is often protected w material suppliers. Supplier information is provided only as essese estimates do not include trace levels of dopants, m	e date of this document, there is regulatory concern for any regul if flammability standard for plasticals/plastics/ ipped are made from polyvinyl continuous form concerning subsect to the best of its knowledge form because it has been compil d from disclosure as trade secretimates of the average weight of	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. ics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microchip assed on the ranges provided in Material Safets and some information may not have been provited these parts and the average weight of anticipate	le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to	a test report a acking slip on ded's semicon ogy Incorpora provided by portract assem exic metals co	the tt the outer ductor ated cannot raw blers and	0.06	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r plding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemi e protective "tubes" in which the specific product is shi x and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati vices in their original packing materials is true and corr arantee the completeness and accuracy of data in this faterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as es	e date of this document, there is regulatory concern for any regul in flammability standard for plasticals/plastics/ ipped are made from polyvinyl continuous in this form concerning substruct to the best of its knowledge form because it has been compiled that the compile that t	Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Ics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microchip add belief, as of the date listed in Material Safets and some information may not have been provided these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the offith respect to the information provided in this device in the second of the se	le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to finished parts claration. The	a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos.	the t the outer iductor ated cannot raw blers and omponents.	0.06	(mg) Total Gold (mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.4
chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r lding compounds used by Microchip meet the UL94 V0 oc://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shie and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati irices in their original packing materials is true and corr arantee the completeness and accuracy of data in this feterial suppliers. Supplier information is provided only as est ese estimates do not include trace levels of dopants, mu- crochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Inc	e date of this document, there is regulatory concern for any regul of flammability standard for plasticals/plastics/ ipped are made from polyvinyl of ipped are made from polyvinyl of ipped are made from polyvinyl of its things are made from because it has been compiled from disclosure as trade secretimates of the average weight of itetals, and non-metal materials of warranty, express or implied, worporated and its subsidiaries a and invoices. The changes to Material Content De the users' reliance on the information of the information of the content of the users' reliance on the information.	Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Ics. You can access the UL IQTM family of databatchloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Microled based on the ranges provided in Material Safe ts and some information may not have been provided to the parts and the average weight of anticipate contained within silicon devices (silicon IC) in the difference of the provided in this deare contained in Microchip's standard terms and decapted and shall not be liable for any damage eclarations and shall not be liable for any damage	to hold the pa ogy Incorporatochip Technol oty Data Sheets vided by subco d significant to finished parts claration. The conditions of s	a test report a acking slip on ded's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	the t the outer iductor ated cannot raw blers and omponents. hited e provided		(mg) Total Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100 100.00	0.4
hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL94 voi.//ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this ferial suppliers. Supplier information is often protected material suppliers. Information is provided only as esise estimates do not include trace levels of dopants, morochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incircochip's quotations, sales order acknowledgement, irrochip disclaims any duty to notify users of updates or erwise, suffered by users or third parties as a result of	e date of this document, there is regulatory concern for any regul of flammability standard for plasticals/plastics/ ipped are made from polyvinyl of ipped are made from polyvinyl of ipped are made from polyvinyl of its things are made from because it has been compiled from disclosure as trade secretimates of the average weight of itetals, and non-metal materials of warranty, express or implied, worporated and its subsidiaries a and invoices. The changes to Material Content De the users' reliance on the information of the information of the content of the users' reliance on the information.	Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Ics. You can access the UL IQTM family of databatchloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Microled based on the ranges provided in Material Safe ts and some information may not have been provided to the parts and the average weight of anticipate contained within silicon devices (silicon IC) in the difference of the provided in this deare contained in Microchip's standard terms and decapted and shall not be liable for any damage eclarations and shall not be liable for any damage	to hold the pa ogy Incorporatochip Technol oty Data Sheets vided by subco d significant to finished parts claration. The conditions of s	a test report a acking slip on ded's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	the t the outer ductor ated cannot raw blers and omponents.		(mg) Total Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight	0.4

MC 8 DFN 7:04 PM : 8/8/2012

Salic Substance	Semiconductor Device	e Type: MF 08 (Lead)	DFN 3x3 mm (A7/AJ)		nation Base /	•		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
Sitos, Modification 1999-9-90 Modification 1997-9-90 1999-			"Contained In"		malnort		12.20	(mg) Total	Mold Compound	% ot Total Weight	51.24
Figure Restrict Part 2000335 Trade Secret Mold Compound 2.485 0.981 24.951 Part			•					Cilian funed	60676 96 0	00.00	11
Principle Resis							Enov				
Caston Block							Lpox				
Copper 1746-05-05 Least Frame 0.099 0.024 900 9.22 (mg) Total Least Frame 9.099 0.024 900 9.024 900 9.024 1.000 Frame 9.099 0.024 900 9.024 900 9.024 1.000 Frame 9.025 9.000											
Tin 17440-31-5 Lead Finame 0.754 0.180 7-544 Copper 7446-22-4 Lead Finame 0.754 0.180 7-544 Copper 7446-22-9 8742 20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								odrbon Black		****	7)
Sher 7440224 Lead Frame 0.754 0.180 7,544 The Coppose 7440508 9.42							0.42	(mg) Total			
Zinc 7440-666 Lead Frame 0.071 0.117 713 Secret 7440-73 Lead Frame 0.099 0.024 990 1.017 713 1.018 1.0							5.42				39.0
Silver 7440-274 De Attach 0.733 0.175 7.332 Projective Silver 7440-274 De Attach 0.733 0.175 7.332 Projective Silver 7440-274 De Attach 0.169 0.000 0.							•				
Silver Propriety Trade Secret Die Attach 0.169 0.040 1.592 Treated silica Trade Secret Die Attach 0.169 0.040 1.592 Treated silica Trade Secret Die Attach 0.019 0.004 1.592 Treated silica Trade Secret Die Attach 0.019 0.004 1.592 Treated silica Trade Secret Die Attach 0.019 0.005 1.58 Silicon 1.445-21-3 1.000 1.452-1.3 1.000 Trade Secret Die Attach 0.019 0.005 1.58 Silicon 1.445-21-3 1.000 1.											
Anyptier resine Proprietary Trade Secret Die Attach 0.169 0.040 1.992 Traded Secret Die Attach 0.019 0.004 188 0.22 mg/Total 100.09 Heletocyclic organic compound 1 male Secret Die Attach 0.019 0.004 188 0.22 mg/Total 100.09 Secon 1.744-0.213 Chip (Die) 3.410 0.055 8.05 (Die) 1.005							•				
Treated slicks Trade Secret Die Atlach 0.019 0.004 188 1							•				
Heterocyclic organic compound Tride Secret Nation Tride Secret Tride								Cilioillaili			<u>U</u>
Silcon 7440-21-3 Chip (Die) 3.61 0 0.899 3.01-00 Advisory 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
Gold 7440575 Wire Band 1470 0350 14700 1740 0350 14700 1740 1740 0350 14700 1740 1740 1740 1740 1740 1740 17							0.22				0.94
Tin 7440-31-5 Relating on external lease (prior). Name Tin is annowled at 150°C for 1 hour 10.74 & 14.00 1.000,000 23.80 1.000,000 1.000											
Berniconductor device and its homogenous materials comply with EU Directive 2002/39/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2002/39/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2002/39/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2002/39/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and the above EU Directive 2011/85/EU (RoHS Recast Directive) and with EU and European Europ											
O.0238 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (End-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Displace with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Displace with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Displace with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Displace with the specific product of the date of this document, there is no credital reason to believe that the unavoidable impurity concentration of the iteration of th	Tin	7440-31-5									
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with the Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with the Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with the Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with the Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with the Directive 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles (ELV) Directive). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles). 10.86 Total (mg) Chip (Die) % of Total Weight 3.61 Indicates with EU Section 2002/95/EC (Pnd-of-Life Vehicles). 10.86 Total (mg)			TOTALS:	100.000	23.800	1,000,000	Heter	rocyclic organic compound	Trade Secret	2	
semiconductor device and its homogenous materials comply with EU Directive 202/95/EC (RoHS Directive). Diance with the above EU Directive has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon T440-21-3 100		0.0238	g Total Mass						Total	100.00	
ng compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot net tee the completeness and accuracy of data in this form because it has been complied based on the average weight of these parts and the average weight of anticipated significant toxic metals components. chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip is standard terms and conditions of sale. These are provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited cut warranties provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited cut warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided to the cut are provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information in Material Section (MCD) or independent third party test reports or of this Certificate of Compliance for semiconductor products.		· ·						1	7440-21-3	100	
Total 100.00 To	hemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the	chemical substance is NO e date of this document, th	T an intentional ingredient in the semiconductor devic					1	7440-21-3	100	
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor bees in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot antee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. e estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Plating on external leads (pins) - Matte Tin / nanealed at 150°C for 1 / annealed at 150°C for 1 / hour Plating on external leads (pins) - Matte Tin / nanealed at 150°C for 1 / hour Plating on external leads (pins) - Matter Tin / nanealed at 150°C for 1 / hour Plating on external leads (pins) - Matter Tin / nanealed at 150°C for 1 / hour Tin 7440-31-5 100.00 Tin 7440-31-5 100.00	hemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 VO/ful.com/global/eng/pages/offerings/industries/chemi	chemical substance is NC e date of this document, the regulatory concern for any of flammability standard for icals/plastics/	or an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable regulatory scheme world-wide. Plastics. You can access the UL iQTM family of database.	le impurity co	ncentration of	f the	0.35	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. Continuous provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. Continuous provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. Continuous provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or twise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Continuous provided Continuous	hemical substance is absent from the list above, the inclogy Incorporated's knowledge and belief as of the incal substance, if any, is not below the threshold of ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi	chemical substance is NC e date of this document, the regulatory concern for any of flammability standard for icals/plastics/	or an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable regulatory scheme world-wide. Plastics. You can access the UL iQTM family of database.	le impurity co	ncentration of	f the	0.35	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	1.47
rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 100.00	hemical substance is absent from the list above, the inology Incorporated's knowledge and belief as of the inical substance, if any, is not below the threshold of ining compounds used by Microchip meet the UL94 Vol/ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. The process of the information is often protected in their original packing materials is true and contante the completeness and accuracy of data in this irrial suppliers. Supplier information is often protected material suppliers. Information is provided only as estables.	chemical substance is NC e date of this document, the regulatory concern for any of flammability standard for icals/plastics/ hipped are made from poly tion in this form concerning rect to the best of its know form because it has been a d from disclosure as trade stimates of the average we	Than intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativity of the intention of	le impurity con uses to obtain a I to hold the pa ogy Incorpora ochip Technol sty Data Sheeto vided by subco d significant to	a test report a acking slip on ted's semicor logy Incorpors s provided by pontract assem oxic metals cic	the outer inductor ated cannot rraw blers and	0.35	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	1.47
Total 100.00	hemical substance is absent from the list above, the inology Incorporated's knowledge and belief as of the incal substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. The process of the information is often protected in their original packing materials is true and contantee the completeness and accuracy of data in this irrial suppliers. Supplier information is often protected material suppliers. Information is provided only as estimates do not include trace levels of dopants, monthly provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provide any uncertained in the provided by Microchip Technology Incorporated does not provided by Microchip Tec	chemical substance is NC e date of this document, the regulatory concern for any of lammability standard for icals/plastics/ hipped are made from poly tion in this form concerning rect to the best of its know form because it has been a d from disclosure as trade stimates of the average we netals, and non-metal mate warranty, express or imp corporated and its subsidi	IT an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable regulatory scheme world-wide. Plastics. You can access the UL iQTM family of databativity of the control of the con	le impurity con asses to obtain a it to hold the pa ogy Incorpora ochip Technol ety Data Sheet- vided by subco dd significant to e finished parts	a test report a acking slip on ted's semicor logy incorpor, s provided by ontract assem oxic metals cos. exclusive, lim	the outer and outcor ated cannot ray raw ablers and omponents.		Doped Silicon (mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100	1.47
	hemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the nology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 Volul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatives in their original packing materials is true and contacte the completeness and accuracy of data in this initial suppliers. Supplier information is often protected naterial suppliers. Information is provided only as expected to the protected of dopants, and the protected of the p	chemical substance is NC e date of this document, the regulatory concern for any of lammability standard for icals/plastics/ nipped are made from poly tion in this form concerning rect to the best of its known form because it has been d from disclosure as tradestimates of the average we netals, and non-metal matery warranty, express or improorporated and its subsidiand invoices.	IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. Plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol redge and belief, as of the date listed in this form. Microchipled based on the ranges provided in Material Safe secrets and some information may not have been prolight of these parts and the average weight of anticipate rials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dearles are contained in Microchip's standard terms and tent Declarations and shall not be liable for any damagetent Declarations and shall not be liable for any damagetent.	le impurity con uses to obtain a l to hold the pa ogy Incorpora ochip Technol ty Data Sheet vided by subcu d significant to finished parts culturation. The conditions of s es, direct or in	a test report a acking slip on ted's semicor logy Incorpors s provided by portract assen oxic metals cos. exclusive, lim sale. These ar direct, consec	it the outer Inductor ated cannot raw biblers and components. Inited the provided expression or the pr		Doped Silicon (mg) Total Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	1.47

MF 8 DFN 7:05 PM : 8/8/2012

Semiconductor Device Type Basic Substance Silica, fused Epoxy Resin (NLP # 500-033-5)	De: MID 09 (Lead	d) DFN 4x4 (M8)								Labeling e3
Silica, fused	l l							-		es
Silica, fused	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.20	(mg) Total	Mold Compound	% ot Total Weight	42.76
	60676-86-0	Mold Compound	38.484	17.279	384,840		Silica, fused	60676-86-0	90.00	
EDUXV RESIT (INLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20,739	Epo	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	i
Phenolic Resin	Trade Secret	Mold Compound	2.074	0.931	20,739	-	Phenolic Resin	Trade Secret	4.85	i
Carbon Black	1333-86-4	Mold Compound	0.128	0.058	1,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.970	20.191	449,695			Total	100.00	,
Iron	7439-89-6	Lead Frame	1.106	0.497	11,061	21.13	(mg) Total	Lead Frame	% of Total Weight	47.07
Silver	7440-22-4	Lead Frame	0.897	0.403	8,967		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.059	0.026	588		Iron	7439-89-6	2.35	i
Phosphorous	7723-14-0	Lead Frame	0.039	0.017	388		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.913	0.410	9,126		Zinc	7440-66-6	0.13	i
Acrylate resins Proprietary	Trade Secret	Die Attach	0.211	0.095	2,106		Phosphorous	7723-14-0	0.08	i
Treated silica	Trade Secret	Die Attach	0.023	0.011	234			Total	100.00	,
Heterocyclic organic compound	Trade Secret	Die Attach	0.023	0.011	234	0.53	(mg) Total	Die Attach	% of Total Weight	1.17
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700		Silver	7440-22-4	78	
Doped Gold	7440-57-5	Wire Bond	0.320	0.144	3,200		Acrylate resins Proprietary	Trade Secret	18	i
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32,100		Treated silica	Trade Secret	2	i
		TOTALS:	100.000	44.900	1,000,000	Hete	erocyclic organic compound	Trade Secret	2	i i
	0.0449	g Total Mass						Total	100.00	•
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Sliance with the above EU Directives has been verified via	internal design contr	ols, supplier declarations, and /or analytical test data.				2.46	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.47
nemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula	of this document, the	ere is no credible reason to believe that the unavoidable						Total	100.00	
ing compounds used by Microchip meet the UL94 V0 flamr //ul.com/global/eng/pages/offerings/industries/chemicals/p	•	plastics. You can access the UL iQTM family of databas	ses to obtain	a test report a	at	0.14	(mg) Total	Wire Bond	% of Total Weight	0.32
protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the p	acking slip or	n the outer		Doped Gold	7440-57-5	100	
ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form be rial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals,	the best of its know because it has been of disclosure as trade es of the average wei	edge and belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Material Safet secrets and some information may not have been provi ght of these parts and the average weight of anticipated	ochip Techno ty Data Sheet ided by subc I significant t	logy Incorpor s provided by ontract assen oxic metals c	rated cannot y raw nblers and			Total	100.00	'
ochip Technology Incorporated does not provide any warra uct warranties provided by Microchip Technology Incorpor crochip's quotations, sales order acknowledgement, and ir	ated and its subsidia					1.44	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.21
	nes to Material Cont	ent Declarations and shall not be liable for any damage	s, direct or in	direct, conse	quential or					d .
ochip disclaims any duty to notify users of updates or char rwise, suffered by users or third parties as a result of the u s) or of this Certificate of Compliance for semiconductor pr	sers' reliance on the		ndependent t	hird party tes	st reports		Tin	7440-31-5	100.00	

MD 8 DFN 7:05 PM : 8/8/2012

AICROCHIP				nation Base A	•		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: MF 8 (Lead) I	DFN-S 6x5 mm (A6 / AW)								e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	37.77	(mg) Total	Mold Compound	% ot Total Weight	49.12
Silica, fused	60676-86-0	Mold Compound	44.208	33,996	442.080		Silica, fused	60676-86-0	90.00	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.382	1.832	23,823	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.382	1.832	23.823		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.147	0.113	1,474		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.960	33.036	429.600			Total	100.00	<u>1</u>
Tin	7440-31-5	Lead Frame	0.110	0.085	1,103	33.91	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-31-3	Lead Frame	0.840	0.646	8,401	33.91		7440-50-8	97.42	1 44.1
							Copper			
Zinc	7440-66-6	Lead Frame	0.079	0.061	794		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.110	0.085	1,103		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.320	0.246	3,198		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.074	0.057	738		Chromium	7440-47-3	0.25	<u> </u>
Treated silica	Trade Secret	Die Attach	0.008	0.006	82			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.008	0.006	82	0.32	(mg) Total	Die Attach	% of Total Weight	0.41
Silicon	7440-21-3	Chip (Die)	2.870	2.207	28,700		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.170	0.131	1.700		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.330	2.561	33,300		Treated silica	Trade Secret	2	
		TOTALS:	100.000	76.900	1.000.000	Hete	ocyclic organic compound	Trade Secret	2	
	0.0760		.00.000	. 0.000	.,000,000	11010	coyone organic compound			<u>1</u>]
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directiv	g Total Mass ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.21	Total (mg)	Chip (Die)	% of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verifien chemical substance is absent from the list above, the	s comply with EU Directiv d via internal design con chemical substance is NO		and, to the b	est of Microch	iip	2.21	Total (mg) Doped Silicon			2.87
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, apliance with the above EU Directives has been verifient chemical substance is absent from the list above, the above, the nology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 VO	s comply with EU Directiv b. d via internal design con- chemical substance is Nt d date of this document, to regulatory concern for an flammability standard fo	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidable	e and, to the be	est of Microch	ip the	0.13	, ,,	Chip (Die) 7440-21-3	% of Total Weight	2.87
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of in ding compounds used by Microchip meet the UL94 VO b://ul.com/global/eng/pages/offerings/industries/chemi	s comply with EU Directiv. d via internal design con- chemical substance is No date of this document, t regulatory concern for an flammability standard fo cals/plastics/	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. To an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably y regulatory scheme world-wide.	e and, to the b e impurity con ses to obtain a	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	2.87
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, inpliance with the above EU Directives has been verified the mical substance is absent from the list above, the mical substance is absent from the list above, the mical substance, if any, is not below the threshold of inding compounds used by Microchip meet the UL94 Vol./lul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatices in their original packing materials is true and contantee the completeness and accuracy of data in this erial suppliers. Supplier information is often protected material suppliers. Information is provided only as estables.	s comply with EU Directive. d via internal design concended and the second of the sec	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa	e and, to the be impurity consest to obtain a to hold the particular impurity particular in the partin	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	the t the outer ductor tted cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.17
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, ppliance with the above EU Directives has been verified the process of	s comply with EU Directive. d via internal design concended in the concendent of this document, the degulatory concern for an aflammability standard for cals/plastics/ ipped are made from polition in this form concernitient to the best of its known because it has been in from disclosure as traditimates of the average we etals, and non-metal mat warranty, express or improporated and its subside	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. The plastics of the data believe that the unavoidable or plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used not substances restricted by RoHS in Microchip Technolow ledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been proveleght of these parts and the average weight of anticipate	e and, to the be impurity consess to obtain a to hold the particle of the part	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s.	the outer ductor ted cannot raw blers and imponents.		Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	0.17
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, pliance with the above EU Directives has been verified the mice of the plant of	s comply with EU Directive. d via internal design complete in the complete in the complete in the calls/plastics/ ipped are made from political to the best of its known or more interest to the best of its known or more interest in the complete in the co	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. Or plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used ang substances restricted by RoHS in Microchip Technolowiedge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been provieight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the oblied, with respect to the information provided in this detailed.	e and, to the be impurity corses to obtain a to hold the part of his hold of his obtain. The conditions of sections, direct or in-	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem over metals cost. exclusive, lim sale. These are	the outer ductor sted cannot raw blers and imponents. ited	0.13	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.17

MF 8 DFN-S 7:05 PM : 8/8/2012

Semiconductor Device	Type: MF 10 (Lead) DFN	3x3 mm (E2 / EJ)		nation Base A pper Alloy (C				ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.35	(mg) Total	Mold Compound	% ot Total Weight	80.96
Silica, fused	60676-86-0	Mold Compound	72.864	17.414	728.640		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.927	0.938	39,266	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.927	0.938	39,266	· 1	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.243	0.058	2,429		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	3.544	0.847	35,444	-		Total	100.00	
Iron	7439-89-6	Lead Frame	0.087	0.021	872	0.89	(mg) Total	Lead Frame	% of Total Weight	3.71
Silver	7440-22-4	Lead Frame	0.071	0.017	707		Copper	7440-50-8	95.54	•
Zinc	7440-66-6	Lead Frame	0.005	0.001	46		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.491	0.117	4.914		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.013	0.003	126		THOSPHOIOUS	Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.013	0.003	126	0.15	()= ()		% of Total Weight	
			9.260		92,600	0.15	(mg) Total	Die Attach		0.63
Silicon	7440-21-3	Chip (Die)		2.213			Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.820	0.196	8,200	<u> </u>	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.620	1.104	46,200		Treated silica	Trade Secret	2	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		/95/EC (RoHS Directive), EU Directive 2011/65/EU	100.000 (RoHS Recast	23.900 Directive) and	1,000,000 d with EU	2.21	Total (mg)	Trade Secret Total Chip (Die)	2 100.00 % of Total Weight	9.26
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifier hemical substance is absent from the list above, the conology incorporated's knowledge and belief as of the	comply with EU Directive 2002 d via internal design controls, s chemical substance is NOT an i date of this document, there is	tal Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU cupplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable	(RoHS Recast	Directive) and	d with EU	-		Total	100.00	9.26
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of roling compounds used by Microchip meet the UL94 VO (//ul.com/global/eng/pages/offerings/industries/chemicalsubstance, if any, is not below the threshold of roling compounds used by Microchip meet the UL94 VO	comply with EU Directive 2002 d via internal design controls, s chemical substance is NOT an i date of this document, there is egulatory concern for any regul flammability standard for plast cals/plastics/	tal Mass 1/95/EC (RoHS Directive), EU Directive 2011/65/EU 1/95/EC (RoHS Directive), EU Directive 2011/65/EU 1/95/EC (RoHS Directive), EU Directive 2011/65/EU 1/95/EC (RoHS Directive), and /or analytical test data. 1/95/EC (RoHS Directive), EU Directive 2011/65/EU 1/95/EC (RoHS Directive	(RoHS Recast e and, to the b le impurity con	Directive) and est of Microch contration of a test report a	d with EU	-	Total (mg) Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
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pliance with the above EU Directives has been verified hemical substance is absent from the list above, the concluder of the mical substance is absent from the list above, the concluder of the mical substance, if any, is not below the threshold of ring compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shipped to the microchip meet the UL94 VO received in the microchip meet the UL94 VO received in the microchip meet the UL94 VO received in the specific product is shipped in the microchip materials is true and cornate the completeness and accuracy of data in this formation is often protected material suppliers. Supplier information is often protected material suppliers. Information is provided only as east estimates do not include trace levels of dopants, monthly Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporation Technology Incor	d via internal design controls, so chemical substance is NOT an indate of this document, there is egulatory concern for any regul flammability standard for plasticals/plastics/ ipped are made from polyvinyl of the best of its knowledge orm because it has been compile from disclosure as trade secretimates of the average weight of etals, and non-metal materials of warranty, express or implied, worporated and its subsidiaries a and invoices.	tal Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable latory scheme world-wide. Identical test and the semiconductor device ics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technological and belief, as of the date listed in this form. Microchied based on the ranges provided in Material Safets and some information may not have been provided the seminormation with the seminormation of the seminormation of the seminormation of the provided in this deviate contained within silicon devices (silicon IC) in the with respect to the information provided in this deviate contained in Microchip's standard terms and contained in Microchip's standard terms and contained and shall not be liable for any damage eclarations and shall not be liable for any damage	e and, to the ble impurity coruses to obtain a to hold the paogy Incorporation of the part	est of Microchocentration of a test report a cking slip on ted's semiconogy Incorpora is provided by ontract assem toxic metals contract assem toxic metals contract assem ale. These are	the outer ductor ductor raw blers and mponents. ited	0.20	Total (mg) Silicon (mg) Total Gold (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.82

MF 10L DFN 7:05 PM : 8/8/2012

MICROCHIP				mination Base Copper Alloy			•	nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor De	evice Type: MF 08 (pin) I									
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	56.97	(mg) Total	Mold Compound	% ot Total Weight	54.4
Silica, fused	60676-86-0	Mold Compound	48.960	51.271	489,600		Silica, fused	60676-86-0	90.00	
Epoxy Resin	500-033-5	Mold Compound	2.638	2.763	26,384	1	Epoxy Resin	500-033-5	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.638	2.763	26,384	1	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.163	0.171	1,632	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	16.394	17.168	163,942			Total	100.00	
Iron	7439-89-6	Lead Frame	0.403	0.422	4,033	17.97	(mg) Total	Lead Frame	% of Total Weight	17.16
Silver	7440-22-4	Lead Frame	0.327	0.342	3,269	l	Copper	7440-50-8	95.54	
Zinc	7440-66-6 7723-14-0	Lead Frame Lead Frame	0.021 0.014	0.022 0.015	215 142		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Phosphorous Copper	7/23-14-0	Clip Attachment (92.5/5/2.5 PbSnAq)	14.697	15.391	146.970	ł	Zinc	7440-22-4 7440-66-6	0.13	
Iron	7439-89-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.354	0.371	3,544	ł	Phosphorous	7723-14-0	0.08	
Zinc	7440-66-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.018	0.019	181		1 Hospitorous	Total	100.00	l
Phosphorous	7723-14-0	Clip Attachment (92.5/5/2.5 PbSnAg)	0.011	0.013	106	15.79	(mg) Total	Clip	% of Total Weight	15.08
Lead	7439-92-1	Clip Attachment (92.5/5/2.5 PbSnAg)	6.346	6.645	63,455	13.73	Copper	7440-50-8	97.46	13.00
Silver	7440-22-4	Clip Attachment (92.5/5/2.5 PbSnAg)	0.343	0.359	3,430	i	Iron	7439-89-6	2.35	
Tin	7440-31-5	Clip Attachment (92.5/5/2.5 PbSnAg)	0.172	0.180	1,715	1	Zinc	7440-66-6	0.12	
Silicon	7440-21-3	Chip (Die)	3.290	3.445	32,900	1	Phosphorous	7723-14-0	0.07	
Doped Gold	7440-57-5	Wire Bond	0.830	0.869	8,300	1	<u>L</u>	Total	100.00	,
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	2,492	23,800	7.18	(mg) Total	Clip Attachment (92.5/5/2.5 PbSnAq)	% of Total Weight	6.86
1111	7440-51-5	TOTALS:				High temp		(92.5/5/2.5 PBSRAD)		
			100.000	104.720	1,000,000	solder	Lead	7439-92-1	92.50	
		g Total Mass					Silver	7440.00.4	5.00	
						1	Oliver	7440-22-4	3.00	
		e 2002/95/EC (RoHS Directive) uses EU-RoHS application	exemption	7(a): Lead in	high melting		Tin	7440-22-4	2.50	
perature type solders (i.e. lead-based alloys conta	aining 85% by weight or more le		exemption	7(a): Lead in	high melting					
perature type solders (i.e. lead-based alloys conta mpliance with the above EU Directives has been ve chemical substance is absent from the list above, chnology incorporated's knowledge and belief as o	aining 85% by weight or more le erified via internal design contr the chemical substance is NO of the date of this document, the	ead. ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	and, to the	best of Microc	chip	3.45		7440-31-5	2.50	3.29
perature type solders (i.e. lead-based alloys contain mpliance with the above EU Directives has been ventured in the list above, chemical substance is absent from the list above, chnology incorporated's knowledge and belief as of mical substance, if any, is not below the threshold ding compounds used by Microchip meet the UL9	aining 85% by weight or more le erified via internal design contr , the chemical substance is NOT of the date of this document, the d of regulatory concern for any 14 V0 flammability standard for	ead. ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	and, to the	best of Microconcentration o	chip of the	3.45	Tin (mg) Total	7440-31-5 Total Chip (Die)	2.50 100.00 % of Total Weight	3.29
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nperature type solders (i.e. lead-based alloys conta mpliance with the above EU Directives has been ver chemical substance is absent from the list above, chnology incorporated's knowledge and belief as openical substance, if any, is not below the threshold iding compounds used by Microchip meet the UL9 p://ul.com/global/eng/pages/offerings/industries/cle protective "tubes" in which the specific product it	aining 85% by weight or more le erified via internal design contr- , the chemical substance is NOT of the date of this document, the d of regulatory concern for any out V0 flammability standard for hemicals/plastics/ is shipped are made from polyv	ead. ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	and, to the impurity co	best of Microconcentration of a test report	chip of the at	3.45	Tin (mg) Total	7440-31-5 Total Chip (Die)	2.50 100.00 % of Total Weight	3.29
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erature type solders (i.e. lead-based alloys conta pliance with the above EU Directives has been venemical substance is absent from the list above, nology incorporated's knowledge and belief as o ical substance, if any, is not below the thresholding compounds used by Microchip meet the UL9 (ful.com/global/eng/pages/offerings/industries/ctorotective "tubes" in which the specific product inducertain "reels" may be made from PVC plastication of their original packing materials is true and antee the completeness and accuracy of data in tilers. Supplier information is often protected from rial suppliers. Information is provided only as es e estimates do not include trace levels of dopant ochip Technology Incorporated does not provide anties provided by Microchip Technology Incorporated of the protections, sales order acknowledgemen ochip disclaims any duty to notify users of updat wise, suffered by users or third parties as a resure.	aining 85% by weight or more learified via internal design contruit the chemical substance is NOT of the date of this document, the dof regulatory concern for any 24 V0 flammability standard for hemicals/plastics/ is shipped are made from polywic. Transition in this form concerning it correct to the best of its knowly his form because it has been come disclosure as trade secrets a stimates of the average weight of the test of the secret and the secret and its subsidiaries are int, and invoices.	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used to g substances restricted by RoHS in Microchip Technolo ledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safet and some information may not have been provided by significance parts and the average weight of anticipated significance in the semination of these parts and within silicon devices (silicon IC) in the semination in the semination of the semination	and, to the impurity color impurity	best of Microconcentration of a test report backing slip of ated's semicology Incorposts provided bassemblers are c metals compts.	chip of the at In the outer Inductor Induc	0.87	(mg) Total Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	2.50 100.00 % of Total Weight 100 400.00 100.00	0.83

MF 08 PDFN 7:05 PM : 8/8/2012

AICROCHIP Semiconductor Device	e Type: QAE 8 (Lead) TDF	N=S evevo omm (1/2)		nation Base A	-		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
- Commoditation Device	C 1990. QAL O(Lead) IDI	"Contained In"	% Total		1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	38.82	(mg) Total	Mold Compound	% ot Total Weight	52.6
Silica, fused	60676-86-0	Mold Compound	47.340	34.937	473,400		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.551	1.883	25,511	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.551	1.883	25,511		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.158	0.116	1,578	<u>[</u>	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.215	28.203	382,150			Total	100.00	
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400	29.52	(mg) Total	Lead Frame	% of Total Weight	40
Silver	7440-22-4	Lead Frame	0.762	0.562	7,620		Copper	7440-50-8	95.54	
Zinc Phosphorous	7440-66-6 7723-14-0	Lead Frame Lead Frame	0.050	0.037 0.024	500 330		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Silver (Ag)	7440-22-4	Die Attach	0.033	0.520	7.040		Zinc	7440-22-4	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.750	0.110	1,496		Phosphorous	7723-14-0	0.08	
Copper (Cu)	7440-50-8	Die Attach	0.026	0.019	264	Į	Filospilolous	Total	100.00]
Silicon	7440-21-3	Chip (Die)	5.140	3.793	51,400	0.65	(mg) Total	Die Attach	% of Total Weight	0.88
Gold	7440-57-5	Wire Bond	0.270	0.199	2,700	0.03	Silver (Ag)	7440-22-4	80	0.00
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1,110	0.819	11,100		Epoxy Resin	Trade Secret	17	
100	7 TIO OT O TRAINING	TOTALS:	100.000	73.800	1,000,000		Copper (Cu)	7440-50-8	3	
	0.0738 g To				,,	L		Total	100.00	ı
semiconductor device and its homogenous materia			(DaUC Dasset	Directive) on	d with Ell		1			
		2733/LC (NOTIS Directive), LO Directive 2011/03/LO								
ctive zuuzios/EC (Ena-ot-Lite venicies (ELV) Directive	e).		•	,	20	3.79	Total (mg)	Chip (Die)	% of Total Weight	5.14
, , ,	•	supplier declarations, and /or analytical test data.	•		20	3.79	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.14
npliance with the above EU Directives has been verific	ied via internal design controls, s			,		3.79	, 5/	7440-21-3	100	5.14
pliance with the above EU Directives has been verific hemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of th nical substance, if any, is not below the threshold of	ied via internal design controls, s e chemical substance is NOT an i ne date of this document, there is f regulatory concern for any regu	intentional ingredient in the semiconductor device s no credible reason to believe that the unavoidable latory scheme world-wide.	le impurity cor	est of Microch	nip the	3.79	, 5/			5.14
pliance with the above EU Directives has been verifiichemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of thing compounds used by Microchip meet the UL94 Vi	ield via internal design controls, s e chemical substance is NOT an i ne date of this document, there is f regulatory concern for any regu	intentional ingredient in the semiconductor device s no credible reason to believe that the unavoidable latory scheme world-wide.	le impurity cor	est of Microch	nip the	0.20	, 5/	7440-21-3	100	
npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vi :://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl	ield via internal design controls, see chemical substance is NOT an interest and the date of this document, there isee fregulatory concern for any regulatory concern for any regulatory candard for plast nicals/plastics/	intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable latory scheme world-wide. tics. You can access the UL iQTM family of databa	le impurity cor	est of Microch acentration of a test report a	nip the		Doped Silicon	7440-21-3 Total	100	
mpliance with the above EU Directives has been verifical chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of iding compounds used by Microchip meet the UL94 Vip://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is sl x and certain "reels" may be made from PVC plastic.	ield via internal design controls, see chemical substance is NOT an internal design controls, see chemical substance is NOT an interest in the date of this document, there is fregulatory concern for any regulatory concerns for any control of the date of the	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidable latory scheme world-wide. tics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used	le impurity cor ses to obtain a to hold the pa	est of Microch ncentration of n test report a ncking slip on	nip the t		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verifical chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of Iding compounds used by Microchip meet the UL94 Veriful. com/global/eng/pages/offerings/industries/chem is protective "tubes" in which the specific product is slat and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and corporate the completeness and accuracy of data in this terial suppliers. Supplier information is often protected material suppliers. Information is provided only as e	ied via internal design controls, see chemical substance is NOT an internal design controls, see chemical substance is NOT an interest in the date of this document, there is fregulatory concern for any regulatory concern for any regulation in this form concerning substance in this form concerning substance is form because it has been completed from disclosure as trade secrestimates of the average weight to	intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable latory scheme world-wide. tics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used sestances restricted by RoHS in Microchip Technologiand belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safests and some information may not have been provide these parts and the average weight of anticipater.	le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to	est of Microch neentration of a test report a cking slip on ted's semicon ogy Incorpora provided by ontract assem oxic metals cc	t t t the outer aductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifical chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of Idding compounds used by Microchip meet the UL94 Vip://lul.com/global/eng/pages/offerings/industries/cheme e protective "tubes" in which the specific product is six and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and contains the completeness and accuracy of data in this sterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as esse estimates do not include trace levels of dopants, in crochip Technology Incorporated does not provide any odduct warranties provided by Microchip Technology Informoration is concluded the material suppliers and the concluded trace levels of dopants, in crochip Technology Incorporated does not provide any odduct warranties provided by Microchip Technology Informoration is calcology in Microchip's quotations, sales order acknowledgement	ieled via internal design controls, see chemical substance is NOT an internal design controls, see chemical substance is NOT an internal design controls and interest in regulatory concern for any regulatory concern for any regulatory concern for any regulatory concern for any regulation in this form concerning substance to the best of its knowledges form because it has been compiled from disclosure as trade secre settimates of the average weight of metals, and non-metal materials by warranty, express or implied, we noorporated and its subsidiaries is	intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable latory scheme world-wide. tics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used sestances restricted by RoHS in Microchip Technologies and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safets and some information may not have been provide these parts and the average weight of anticipates contained within silicon devices (silicon IC) in the with respect to the information provided in this devith respect to the information provided in this device with respect to the information provided in this device.	ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to finished parts claration. The	est of Microch neentration of a test report a cking slip on ed's semicon ogy Incorpora s provided by ontract assem exic metals co	t t the outer ductor ated cannot raw blers and omponents.		Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.27
mpliance with the above EU Directives has been verifice chemical substance is absent from the list above, the hnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vict/ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sland certain "reels" may be made from PVC plastic and certain "reels" may be made from PVC plastic races in their original packing materials is true and corrantee the completeness and accuracy of data in this terial suppliers. Supplier information is often protecte material suppliers. Supplier information is provided only as ease estimates do not include trace levels of dopants, norochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology In	ied via internal design controls, see chemical substance is NOT an internal design controls, see chemical substance is NOT an internal design controls, see chemical substance in the seed of this document, there is fregulatory concern for any regular (of flammability standard for plast nicals/plastics/ chipped are made from polyvinylobin in this form concerning substance to the best of its knowledge if form because it has been completed from disclosure as trade secrestimates of the average weight of metals, and non-metal materials of warranty, express or implied, warranty, express or implied, warranty, express or implied, warranty in the seed of the subsidiaries at and invoices.	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidable alatory scheme world-wide. Itics. You can access the UL iQTM family of databatchloride (PVC) plastic. "Window envelopes" used a stances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchip devices and some information may not have been provided and some information may not have been provided the specific provided in Material Safests and some information may not have been provided the specific provided in the devices (silicon IC) in the with respect to the information provided in this deviare contained in Microchip's standard terms and devices (silicon IC) and the specific provided in this deviare contained in Microchip's standard terms and devices are contained and shall not be liable for any damage	ses to obtain a to hold the pa gy Incorporat ochip Technol ty Data Sheets dided by subco d significant to finished parts claration. The conditions of s es, direct or ince	est of Microch ncentration of a test report a cking slip on eed's semicon ogy Incorpora provided by provided by nutract assem oxic metals co. exclusive, lim ale. These are	t the outer adductor ated cannot raw blers and omponents.	0.20	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100 100.00	0.27
appliance with the above EU Directives has been verificated in the list above, the shoology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vi./lul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl and certain "reels" may be made from PVC plastic. To chip Technology Incorporated believes the informations in their original packing materials is true and corporate the completeness and accuracy of data in this erial suppliers. Supplier information is often protected material suppliers. Information is provided only as ease estimates do not include trace levels of dopants, in cochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provide any functional provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated d	ied via internal design controls, see chemical substance is NOT an internal design controls, see chemical substance is NOT an internal design controls, see chemical substance in the seed of this document, there is fregulatory concern for any regular (of flammability standard for plast nicals/plastics/ chipped are made from polyvinylobin in this form concerning substance to the best of its knowledge if form because it has been completed from disclosure as trade secrestimates of the average weight of metals, and non-metal materials of warranty, express or implied, warranty, express or implied, warranty, express or implied, warranty in the seed of the subsidiaries at and invoices.	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidable alatory scheme world-wide. Itics. You can access the UL iQTM family of databatchloride (PVC) plastic. "Window envelopes" used a stances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchip devices and some information may not have been provided and some information may not have been provided the specific provided in Material Safests and some information may not have been provided the specific provided in the devices (silicon IC) in the with respect to the information provided in this deviare contained in Microchip's standard terms and devices (silicon IC) and the specific provided in this deviare contained in Microchip's standard terms and devices are contained and shall not be liable for any damage	ses to obtain a to hold the pa gy Incorporat ochip Technol ty Data Sheets dided by subco d significant to finished parts claration. The conditions of s es, direct or ince	est of Microch ncentration of a test report a cking slip on eed's semicon ogy Incorpora provided by provided by nutract assem oxic metals co. exclusive, lim ale. These are	t the outer adductor ated cannot raw blers and omponents.	0.20	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour.	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.27

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ompliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if only, is not below the threshold of regulatory concern for any regulatory scheme world-wide. In the protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box On the protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box	MICROCHIP				nation Base A pper Alloy (C	. ,		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Sale Substance	Semiconductor Device	I I Y PE: MINY U8 (Lead) I	` ,								e4
Equation Transit Secret Model Corporant 5,217 0,730 9,174 Phenois (Para) Transit Secret 5,00 Phenois (Para) Pheno	Basic Substance	CAS Number			mg/part	ppm	8.40	(mg) Total	Mold Compound	%ot Total Weight	59.97
Preside Resident Table Secret Model Compound 0.150 0.025 0	Silica, vitreous (or fused)	60676-86-0	Mold Compound	50.975	7.136	509,745		Silica, vitreous (or fused)	60676-86-0	85.00	
Cation Black	Epoxy Resin	Trade Secret	Mold Compound	5.217	0.730	52,174		Epoxy Resin	Trade Secret	8.70	
Copper											
Inch								Carbon Black		0.00	
Phosphorous 772-14-0 Leas Frame 0.084 0.012 941 Experiments of the company of the											
Trice Metals Tric							4.71				33.62
Silver Ty40-02-4 De Atlach 0.936 0.131 9,380 Ancytate resins Proprietary Trade Secret De Atlach 0.036 0.030 2,100 Treated silica Trade Secret De Atlach 0.034 0.003 240 Trade								Copper	7440-50-8		
Acryster resins Proportatory Trade Secret Die Attach 0.216 0.030 2.160 Treated allica Treated allica Treated screet Die Attach 0.024 0.033 2.40 17 (mol Total Veight 10.000 17.400-17.10											
Treated alicia Trade Secret Die Attach 0.024 0.003 240 9.77 (mos) Total 109.00 1.000											
Heterocyclic organic compound Trade Secret Poly (Die) Auton Trade Secret Trade Secre								Zinc (Metal)			
Silicon 7440:21-3 Chip (Die) 4.010 0.951 40,100 See 7440:22-4 78 Gold 7440:75-5 Wire Bond 0.770 0.008 7.700 1.008								·			
Next T440:57-5 Wire Bond 0.770 0.108 7.700	Heterocyclic organic compound	Trade Secret	Die Attach	0.024	0.003	240	0.17	(mg) Total	Die Attach	% of Total Weight	1.2
Neklet 7440-02-0 Pallaring on external leads (pine) 0.412 0.058 4.116			Chip (Die)			40,100		Silver	7440-22-4	78	
Palladium	Gold	7440-57-5	Wire Bond	0.770	0.108	7,700		Acrylate resins Proprietary	Trade Secret	18	
Gold 7440-57-5 Plating on external leads (pins) TOTALS: 100.000 1.000 1.000 1.000 1.000 0.55 Total Impl. Ohip (Dip % of Total Weight 0.77 total Weight 0.47 total Weight 0.48 total (pins) 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.55 Total Impl. Ohip (Dip % of Total Weight 0.47 total Weight 0.48 to their original packing materials is to the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is absent from the list above, the chemical substance is not read to this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if No.100 1.000	Nickel	7440-02-0	Plating on external leads (pins)						Trade Secret	2	
0.0140 g Total Mass 10 0.000 14.000 1,000,000 1,000,000 1,000,000 1,000,000	Palladium	7440-05-03			0.002	139	Hete	rocyclic organic compound	Trade Secret	2	
O.014 g Total Mass is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoH-0f-Life Vehicles (ELV) Directive). Ompliance with the above EU Directives has been verified via internal design controls, supplier declarations, and or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology recorporated Sknowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, it yields the protective "University of the protect	Gold	7440-57-5	Plating on external leads (pins)	0.004	0.001	45			Total	100.00	
his semiconductor device and its homogenous materials comply with EU Directive 2007/85/EC (RoHS Directive). BU Directive 2017/85/EU (RoHS Recast Directive) and with EU directive 2007/85/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if very list of the concern for any requistory scheme world-wide. In the protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing silp on the outer box different in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is often protected from disclosure as trade secrets and some information any not have been information and normatical suppliers. Information is provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product licrochip squatations, sales order acknowledgement, and invoices. In corp. In the corp. In the corp.			TOTA	S: 100.000	14.000	1 000 000	0.56	Total (mg)	a	0/ - / T - / - 14/- ' - /	4.01
his semiconductor device and its homogenous materials comply with EU Directive 2007/85/EC (RoHS Directive). BU Directive 2017/85/EU (RoHS Recast Directive) and with EU directive 2007/85/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if very list of the concern for any requistory scheme world-wide. In the protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing silp on the outer box different in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is often protected from disclosure as trade secrets and some information any not have been information and normatical suppliers. Information is provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product licrochip squatations, sales order acknowledgement, and invoices. In corp. In the corp. In the corp.		0.0440 T-				1,000,000		Total (IIIg)	Chip (Die)	% of Total Weight	4.01
poped Gold 7440-57-5 100 poped Gold 7440-57-5 poped Gold 7440-57-5 100 poped Gold 7440-57-5 poped Gold	This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			U (RoHS Recast Di	rective) and w	,,			7440-21-3	100	
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ he protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box diccreatin "reels" may be made from PVC plastic. Complete Complete	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified	comply with EU Directive 2002/s	95/EC (RoHS Directive), EU Directive 2011/65/	a.	·	rith EU		Doped Silicon	7440-21-3 Total	100	
one dicertain "reels" may be made from PVC plastic. 0.06	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the concorporated's knowledge and belief as of the date of this duny, is not below the threshold of regulatory concern for an	via internal design controls, su hemical substance is NOT an in locument, there is no credible re by regulatory scheme world-wid	PS/EC (RoHS Directive), EU Directive 2011/65/ pplier declarations, and /or analytical test dat tentional ingredient in the semiconductor de eason to believe that the unavoidable impurit e.	a. ice and, to the best concentration of the	t of Microchip he chemical s	rith EU		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
In their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee be completeness and accuracy of data in this form because it has been complied based on the ranges provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Ilicrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product rarranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in licrochip's quotations, sales order acknowledgement, and invoices. Ilicrochip's quotations, sales order acknowledgement, and invoices. Ilicrochip disclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) and the rarges provided by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) and the rarges provided by subcontract assemblers a	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the concorporated's knowledge and belief as of the date of this down, is not below the threshold of regulatory concern for an Molding compounds used by Microchip meet the UL94 V0 for the concern for an Molding compounds used by Microchip meet the UL94 V0 for the concern for an Molding compounds used by Microchip meet the UL94 V0 for the concern for an Molding compounds used by Microchip meet the UL94 V0 for the concern for the co	via internal design controls, su via internal design controls, su hemical substance is NOT an in ocument, there is no credible re ny regulatory scheme world-wid lammability standard for plastic	PS/EC (RoHS Directive), EU Directive 2011/65/ pplier declarations, and /or analytical test dat tentional ingredient in the semiconductor de eason to believe that the unavoidable impurit e.	a. ice and, to the best concentration of the	t of Microchip he chemical s	rith EU		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
rarranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Palladium 7440-05-03 3.23 licrochip's quotations, sales order acknowledgement, and invoices. Comparison of the Comparison of Standard Stan	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the concorporated's knowledge and belief as of the date of this duny, is not below the threshold of regulatory concern for an Molding compounds used by Microchip meet the UL94 V0 futtp://ul.com/global/eng/pages/offerings/industries/chemic	via internal design controls, su via internal design controls, su hemical substance is NOT an in locument, there is no credible re by regulatory scheme world-wid lammability standard for plasticals/plastics/	25/EC (RoHS Directive), EU Directive 2011/65// ppplier declarations, and /or analytical test dat tentional ingredient in the semiconductor de- teason to believe that the unavoidable impurit e. es. You can access the UL iQTM family of data	a. ice and, to the best concentration of the bases to obtain a te	t of Microchip he chemical si est report at	Technology	0.11	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100 100.00	0.77
therwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) JGPSSI (D02) (Gold) 7440-57-5 1.04	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the cincorporated's knowledge and belief as of the date of this duny, is not below the threshold of regulatory concern for an Molding compounds used by Microchip meet the UL94 V0 fittp://ul.com/global/eng/pages/offerings/industries/chemic. The protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information their original packing materials is true and correct to the he completeness and accuracy of data in this form becaus Supplier information is often protected from disclosure as anformation is provided only as estimates of the average we	via internal design controls, su hemical substance is NOT an in ocument, there is no credible rr y regulatory scheme world-wid lammability standard for plastic als/plastics/ oped are made from polyvinyl clon in this form concerning substantials best of its knowledge and belie e it has been compiled based o trade secrets and some informatelight of these parts and the average of the secrets and the average of the secret of	pplier declarations, and /or analytical test dat tentional ingredient in the semiconductor declarations to believe that the unavoidable impuritie. s. You can access the UL iQTM family of data and the conductor declaration with the conductor declaration of the conductor declaration with the conductor declaration with the conductor declaration with the conductor declaration of the date listed in this form. Microchip in the ranges provided in Material Safety Data tition may not have been provided by subcontiand with the conductor declaration and the conductor declaration	a. ice and, to the best concentration of the bases to obtain a tended to hold the pack ology Incorporated Technology Incorporated Sheets provided by act assemblers an	t of Microchip he chemical si est report at ing slip on the l's semicondu orated cannot raw material i d raw material	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers.	0.11	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.77
	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the cincorporated's knowledge and belief as of the date of this dany, is not below the threshold of regulatory concern for an Molding compounds used by Microchip meet the UL94 V0 fittp://ul.com/global/eng/pages/offerings/industries/chemic. The protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in their original packing materials is true and correct to the he completeness and accuracy of data in this form becaus Supplier information is often protected from disclosure as information is provided only as estimates of the average we include trace levels of dopants, metals, and non-metal materials provided by Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated	via internal design controls, su hemical substance is NOT an in locument, there is no credible ray regulatory scheme world-wid lammability standard for plasticals/plastics/ oped are made from polyvinyl clam in this form concerning subsides to fits knowledge and belie is that been compiled based of trade secrets and some informatight of these parts and the averaging to the subsidiaries are contains warranty, express or implied, wit and its subsidiaries are contains.	pplier declarations, and /or analytical test dat tentional ingredient in the semiconductor decason to believe that the unavoidable impurities. You can access the UL iQTM family of data and the conductor decason to believe that the unavoidable impurities. You can access the UL iQTM family of data and the conductor of the conduct	ice and, to the best concentration of the bases to obtain a to ed to hold the pack ology incorporated Technology incorporated Sheets provided by act assemblers and tals components. Ideclaration. The ex	t of Microchip he chemical si est report at ing slip on the l's semicondu orated cannot raw material These estimate clusive, limite	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. suppliers. do not d product	0.11	(mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100 100.00 % of Total Weight 100 100.00 % of Total Weight 95.73	0.77
	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified if a chemical substance is absent from the list above, the cincorporated's knowledge and belief as of the date of this diny, is not below the threshold of regulatory concern for an Molding compounds used by Microchip meet the UL94 V0 for http://ul.com/global/eng/pages/offerings/industries/chemic. The protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information their original packing materials is true and correct to the he completeness and accuracy of data in this form becaus supplier information is often protected from disclosure as information is provided only as estimates of the average winclude trace levels of dopants, metals, and non-metal materials in their original packing materials and continued trace levels of dopants, metals, and non-metal materials in the provided by Microchip Technology Incorporated does not provide any varranties provided by Microchip Technology Incorporated incrochip's quotations, sales order acknowledgement, and Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of the provide of the sufficiency of the suf	via internal design controls, su hemical substance is NOT an in cocument, there is no credible re by regulatory scheme world-wid lammability standard for plastic als/plastics/ oped are made from polyvinyl cloped are contained within silicon divarranty, express or implied, wii and its subsidiaries are contained invoices.	pplier declarations, and /or analytical test data tentional ingredient in the semiconductor desason to believe that the unavoidable impurities. You can access the UL iQTM family of data theorem of the date listed in this form. Microchip Techrif, as of the date listed in this form. Microchip the ranges provided in Material Safety Data thom may not have been provided by subcontage weight of anticipated significant toxic mevices (silicon IC) in the finished parts. The respect to the information provided in this need in Microchip's standard terms and conditicated in Microchip's standard terms and conditicated in Microchip's standard terms and conditicated in Microchip's standard terms and conditical caractions and shall not be liable for any damedation.	a. ice and, to the best concentration of the bases to obtain a test of the bases of	t of Microchip he chemical si est report at ing slip on the l's semicondu orated cannot raw material d raw material These estimate clusive, limite are provided i ect, conseque	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. suppliers do not d product n ntial or	0.11	(mg) Total (mg) Total (mg) Total Nickel Palladium	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-05-03	100 100.00 % of Total Weight 100 100.00 % of Total Weight 95.73	0.77

MNY 8 TDFN 7:06 PM : 8/8/2012

Semiconductor Device T	Type: 02AE - 08 // -	TDEN S consequence (CO)		nation Base /	,		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device i	ype. QZAE UO (Le	"Contained In"	% Total	1	,		1			
Dania Subatawa	CAC Normalism	Sub-Component	% rotai Weight			52.55	(mg) Total	Mold Compound	% ot Total Weight	37.14
Basic Substance	CAS Number			mg/part	ppm		Fired Office	60676-86-0	88.50	1
Fused Silica	60676-86-0	Mold Compound Mold Compound	32.869 2.414	46.509 3.416	328,689 24,141		Fused Silica Epoxy Resin	Trade Secret	6.50	
Epoxy Resin 1 Phenol Resin	Trade Secret Trade Secret	Mold Compound	1.764	2,496	17.642		Phenol Resin	Trade Secret	4.75	
Carbon Black	1333-86-4	Mold Compound	0.093	0.131	929		Carbon Black	1333-86-4	0.25	
Copper	7440-50-8	Lead Frame	47.490	67.199	474.904		Calbuil Black	Total	100.00]
Silver	7440-50-6	Lead Frame	3.287	4.651	32,867	73.82				52.17
Iron	7439-89-6	Lead Frame	1.143	1.617	11.425	73.82	(mg) Total	Lead Frame 7440-50-8	% of Total Weight	52.17
Zinc	7439-89-6 7440-66-6	Lead Frame	0.177	0.251	1,774		Copper		91.03	
			0.177	0.251			Silver	7440-22-4	6.30	
Phosphorus Silver	7723-14-0 7440-22-4	Lead Frame Die Attach	0.073	1.362	730 9.625		Iron Zinc	7439-89-6 7440-66-6	2.19 0.34	
	Trade secret	Die Attach	0.963	0.150	1,063				0.34	
Acrylic Resin							Phosphorus	7723-14-0		ļ
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115 0.097	813 688			Total	100.00	
Acrylate	Trade secret	Die Attach				1.77	(mg) Total	Die Attach	% of Total Weight	1.25
Epoxy Resin 2	Trade secret	Die Attach	0.031	0.044	313		Silver	7440-22-4	77.00	
Silicon	7440-21-3	Chip (Die)	7.800	11.037	78,000		Acrylic Resin	Trade secret	8.50	
Gold	7440-57-5	Wire Bond	0.040	0.057	400	Polybutadie	ene derivative & copolymer	Trade secret	6.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.600	2.264	16,000		Acrylate	Trade secret	5.50	
		TOTALS:	100.000	141.500	1,000,000		Epoxy Resin	Trade secret	2.50	J
	0.1415	g Total Mass						Total	100.00	
					d with EU					
, , , ,	via internal design con	trols, supplier declarations, and /or analytical test data.		•	0	11.04	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.8
nology Incorporated's knowledge and belief as of the d	nemical substance is NO date of this document, t	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable			hip	11.04	, ,,	,		7.8
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch nology incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl	nemical substance is NO late of this document, ti gulatory concern for an lammability standard fo	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable	e impurity cor	ncentration of	hip f the	0.06	, ,,	7440-21-3	100	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chinology Incorporated's knowledge and belief as of the discal substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ul.com/global/eng/pages/offerings/industries/chemica	nemical substance is No late of this document, ti gulatory concern for an lammability standard fo als/plastics/	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e impurity cor	ncentration of	hip f the ut		Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chinology Incorporated's knowledge and belief as of the discal substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	nemical substance is NO date of this document, ti gulatory concern for an ammability standard fo als/plastics/ ped are made from poly	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics, You can access the UL IQTM family of databaty and the control of the c	e impurity cor ses to obtain a to hold the pa	ncentration of a test report a acking slip on ted's semicor	hip f the at the outer		Doped Silicon	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl (//ul.com/global/eng/pages/offerings/industries/chemica orotective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Techip Technology Incorporated believes the information is in their original packing materials is true and correcantee the completeness and accuracy of data in this for rial suppliers. Supplier information is often protected finaterial suppliers. Information is provided only as estin	nemical substance is No late of this document, ti gulatory concern for an lammability standard fo als/plastics/ uped are made from poly in in this form concernic to to the best of its knov rm because it has been from disclosure as trade mates of the average we	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databaty yinyl chloride (PVC) plastic. "Window envelopes" used	e impurity con ses to obtain a to hold the pa ogy Incorporal ochip Technol ty Data Sheets ided by subco d significant to	a test report a acking slip on ded's semicor ogy Incorpora s provided by ontract assem oxic metals cc	hip If the It Ithe outer Inductor Ithe cannot raw Itheless and		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chinology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 ff (Jul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Social Technology Incorporated believes the information ces in their original packing materials is true and correct antee the completeness and accuracy of data in this for infall suppliers. Supplier information is often protected finaterial suppliers. Information is provided only as esting estimates do not include trace levels of dopants, met occipit Technology Incorporated does not provide any we	nemical substance is No late of this document, it gulatory concern for an lammability standard fo als/plastics/ uped are made from poly in in this form concernic to to the best of its kno- trom disclosure as trade mates of the average we tals, and non-metal mat varranty, express or improrated and its subsid	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databary vinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technolow ledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been proveleght of these parts and the average weight of anticipates.	e impurity consess to obtain a to hold the pa ogy Incorporat schip Technol ty Data Sheets ided by subcided significant to finished parts claration. The	a test report a acking slip on ted's semicor ogy Incorpora s provided by portract assent oxic metals cos.	hip it the outer adductor ated cannot raw biblers and omponents.		Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/fl/Loom/global/eng/pages/offerings/industries/chemical control of the plant of the ship and certain "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information is in their original packing materials is true and correct antee the completeness and accuracy of data in this for rial suppliers. Supplier information is often protected finaterial suppliers. Information is provided only as estimaterial suppliers. Information is provided only as estimated to not include trace levels of dopants, met obtain the provided by Microchip Technology Incorporated does not provide any we use twarranties provided by Microchip Technology Incorporated for exchology Incorporation is grown and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for exchange and the provided by Microchip Technology Incorporated for	nemical substance is No late of this document, it gulatory concern for an lammability standard fo als/plastics/ ped are made from poly in in this form concernic to to the best of its known mecause it has been from disclosure as trade mates of the average we tals, and non-metal mat varranty, express or improrated and its subside and invoices.	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databaty and the control of the c	e impurity cor ses to obtain a to hold the pa ogy Incorporal ochip Technol ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s	a test report a acking slip on ted's semicor ogy Incorpor- s provided by ontract assem osic metals co- s. exclusive, lim ale. These ar	hip f the It the outer Inductor ated cannot raw blers and omponents. Inited e provided	0.06	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100	0.04
poliance with the above EU Directives has been verified in memical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. The process of the completeness and accuracy of data in this formation in their original packing materials is true and corrulate the completeness and accuracy of data in this formation is often protected finaterial suppliers. Supplier information is often protected finaterial suppliers. Information is provided only as estimates do not include trace levels of dopants, met with the provided by Microchip Technology Incorporated does not provide any with the completeness provided by Microchip Technology Incorporated does not provide any with the provided provided by Microchip Technology Incorporated does not provide any with the provided provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated does not provided by Mi	nemical substance is No late of this document, it gulatory concern for an lammability standard fo als/plastics/ ped are made from poly in in this form concernic to to the best of its known mecause it has been from disclosure as trade mates of the average we tals, and non-metal mat varranty, express or improrated and its subside and invoices.	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databary yinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technology will be used any belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe as secrets and some information may not have been proveight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the tolied, with respect to the information provided in this deciaries are contained in Microchip's standard terms and content the policy of the policy with the place of the pla	e impurity cor ses to obtain a to hold the pa ogy Incorporal ochip Technol ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s	a test report a acking slip on ted's semicor ogy Incorpor- s provided by ontract assem osic metals co- s. exclusive, lim ale. These ar	hip f the It the outer Inductor ated cannot raw blers and omponents. Inited e provided	0.06	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.04

Q2AE 08 TDFN-S 7:06 PM : 8/8/2012

Basic Substance CAS Number Sub-Component Weight mg/part ppm 38.79 (mg) Total Moid Compound % of Total Weight 51.17 (mg) Total Moid Compound 43.495 (32.969 434.945) (mg) Total Moid Compound 53.070 (2.327 30.702) (mg) Total Moid Compound 53.070 (mg) Total Moid C	AICROCHIP Somiconductor Dovice		DENIS CARAGO DATA		ation Base A oper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Silos, viteous de Nased 6907-66-0 Most Compound 4.1,655 32.969 431.915 Processor Pr			, ,		1				1		•
Epop (Rein) Trade Secret Mold Compound 4,022 3,374 4,516 Part Part Secret Mold Compound 3,070 2,927 3,074 4,516 Part Part Secret Mold Compound 3,070 3,075 3,074 4,516 Part	Basic Substance	CAS Number	•		<u> </u>	ppm	38.79	(mg) Total			51.17
Phenotic Research Transis Secret Moles Compound 0.154 1.154 1.554											
Capton 1938-864 Most Corporand 1,158											
Copper											
Triangle of the procedure of the process of the pro								Carbon Black			
Proceptorous											
Time							29.35				38.72
Silver 7440-0224 Die Attach 1,054 0.797 10,568 Eprov resin 1 Trades Secret Die Attach 0.24 0.25 2,840 240 240 240 240 240 240 240 240 240 2											
Except egist from the list above, the chemical substance is absent from the list above, the chemical substance is above the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent fro											
Metal oxide Trade Secret Die Attach 0.043 0.032 426 18											
Silicon 7440-21-3 (Chip (Die) 8.220 6.231 8.200 (Sale 1.68 (mn) Tests Die Attach Nickel 7440-27-5 (Wire Bond 0.230 0.137 2.200 1.197 2.200 1.198 (Sale 7440-27-24 74 1.42 1.42 1.42 1.42 1.42 1.42 1.42 1.4								Zinc (Metal)			
Silcon 17440-21-3 Chip (Die) 0.20 6.231 82.200 1.97 2.605 Service 1.019 1.97 2.605 Service 1.019 1.97 2.605 Service 1.019 1.98 1.015 1.98 1.015 Service 1.019 1.018 Service 1.019											
Gold 7440-57-5 Wire Bond 0,2-80 0.197 2,800 Metaloum Nickel 1740-02-0 Paling on external leads (prins) 0.198 0.150 1.985 (EAST) Paling on external leads (prins) 0.001 0.001 1.005 (ELV) Directive 2007-97-5 (Paling on external leads (prins) 0.001 0.001 1.005 (Paling on external leads (prins) 0.001 0.001 1.005 (Paling on external leads (prins) 0.007-5 (Paling on exte							1.08				1.42
Nickel 7440-02-0 Plating on external leads (pins) 0.198 0.150 1.985 Metal coasts Traids Secret 3 Metal Coasts (Policy Coasts (Policy Coasts) Metal C											
Palladium 7440-05-03 Plating on external leads (pine) 0.011 0.008 105 Gamma-benyrolactorie 96-49-0 3 0.001 0.001 11 Total 100.00 Total Weight 8.22 0.0758 g Total Mass OLO758 g Total Mass Commission of the Commission of Palladium on External Leads (pine) Total 100.00 Total Weight 8.22 (pine) Commission of Palladium on External Leads (pine) Plating on external leads (pine) Total 100.00 Total Weight 100.											
Gold 7440:57.5 Plating on external leads (pins) 0.001 0.001 11 Total 100.00 75.80 1.000,000 6.23 Total (mg) Chip (Die) % for total Weight 8.22 0.0758 g Total Mass 100.00 75.800 1.000,000 6.23 Total (mg) Chip (Die) % for total Weight 8.22 0.0758 g Total (mg) Chip (Die) % for total Weight 8.22 0.0758/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 100.00 74.00.21 0.00 (mg) Total 0.00 74.00.21 0.00 0.00 0.00 0.00 0.00 0.00 0.0										3	
O.758 g Total Mass emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive). Directive). liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology porated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if no tobelow the threshold of regulatory concern for any regulatory scheme world-wide. go compounds used by Microchip meet the ULS4 V0 Ilammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box or original packing materials is true and correct to the best of its knowledge and believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated delieves the information in soften protected from disclosures as trade scorets and some information may not have been provided by well-based only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not let race levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in this form because it has been complied, with respect to the information provided in this form because it has been complied based on the ranges provided in Microchip's standard terms and conditions of sale. These are provided in this formology incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip								Gamma-butyrolactone		3	
0.0758 g Total Mass 10.0758 g Total Mass 1	Gold	7440-57-5									
temiconductor device and its homogenous materials comply with EU Directive 2002/35/EC (End-of-LILE Vehicles (ELV) Directive). ### 2002/35/EC (End-of-LILE Vehicles (EV) Directive). ### 2002/35/EC (End-of-LILE Vehicles). ### 2002/35/EC (End-of-LILE V			TOTALS:	100.000	75.800	1,000,000	6.23	Total (mg)	Chip (Die)	% of Total Weight	8.22
temiconductor device and its homogenous materials comply with EU Directive 2002/35/EC (End-of-LILE Vehicles (ELV) Directive). ### 2002/35/EC (End-of-LILE Vehicles (EV) Directive). ### 2002/35/EC (End-of-LILE Vehicles). ### 2002/35/EC (End-of-LILE V		0.0758 g T	otal Mass					Doped Silicon	7440-21-3	100	
posed Skind Norwiedge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if a not below the threshold of regulatory concern for any regulatory scheme world-wide. In compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Interview "in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box or original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices may be made from PVC plastic. In compound the plant of the packing slip on the outer box or original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. It is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. It is true and correct to developed the provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not et trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. In the finished parts are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, limited product this											
ucon/global/eng/pages/offerings/industries/chemicals/plastics/ rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box ertain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices ir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee may lead to the provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not le trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. chip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in chip's quotations, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffreed by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) do do 7440-57-5 0.50 and Technology Incorporated conductor products.			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				0.20	(mg) Total	Wire Bond	% of Total Weight	0.26
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee in information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Ite information is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not let trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product noticip's quotations, sales order acknowledgement, and invoices. Chip is quotations, sales order acknowledgement, and invoices. Chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) Chip is Certificate of Compliance for semiconductor products.	nemical substance is absent from the list above, the opporated's knowledge and belief as of the date of this	chemical substance is NOT an ir document, there is no credible r	ntentional ingredient in the semiconductor device eason to believe that the unavoidable impurity co				0.20	()			0.26
ir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee impleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by aw material suppliers. In the information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not let trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. The exclusive, limited product notice provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product notice provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration and involves. The exclusive, limited product notice provided in this declaration and conditions of sale. These are provided in the exclusive, limited product notices are provided in the exclusive, limited product notices are provided by Microchip and involves. The exclusive, limited product notice are provided in this declaration and conditions of sale. These are provided in the exclusive, limited product notices are provided by Microchip and the exclusive, limited product notices are provided by Microchip and the exclusive, limited product notices are provided by Microchip and the exclusive, limited product notices are provided in the exclusive, limited product notices are provided by Microchip and the exclusive provided by Microchip and the exclusive provided by Microchip and the exclus	nemical substance is absent from the list above, the operated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a nog compounds used by Microchip meet the UL94 VO	chemical substance is NOT an ir document, there is no credible r any regulatory scheme world-wic flammability standard for plasti	ntentional ingredient in the semiconductor device eason to believe that the unavoidable impurity co le.	ncentration of th	ne chemical s		0.20	()	7440-57-5	100	0.26
nties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Palladium 7440-05-03 5.00 Palladium 7440-05-03 5.00 Gold 7440-57-5 Gold 7440-57-5 0.50	nemical substance is absent from the list above, the operated's knowledge and belief as of the date of this on the solution of	chemical substance is NOT an ir document, there is no credible r any regulatory scheme world-wid flammability standard for plasticals/plastics/	ntentional ingredient in the semiconductor device eason to believe that the unavoidable impurity co le. cs. You can access the UL iQTM family of databas	ncentration of the	ne chemical s	ubstance, if		Doped Gold	7440-57-5 Total Plating on external	100.00	
wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) Gold 7440-57-5 0.50 Gold 7440-57-5 0.50	hemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic. Techip Technology Incorporated believes the informative original packing materials is true and correct to the ompleteness and accuracy of data in this form becausiler information is often protected from disclosure as mation is provided only as estimates of the average we made to the average we have the supplication of the average we made to the average we have the supplication is provided only as estimates of the average we have the supplication is supplied to the average we have the supplied to the su	chemical substance is NOT an ir document, there is no credible r any regulatory scheme world-wic flammability standard for plasti- cals/plastics/ ipped are made from polyvinyl c ion in this form concerning subs- e best of its knowledge and beli- ise it has been compiled based c is trade secrets and some inform- weight of these parts and the ave	tentional ingredient in the semiconductor device eason to believe that the unavoidable impurity code. cs. You can access the UL iQTM family of database the code of the code	es to obtain a te o hold the pack gy Incorporated thnology Incorp ets provided by assemblers and	ne chemical si est report at ing slip on the 's semicondu orated cannot raw material	e outer box ctor devices guarantee suppliers. suppliers.		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight	
	chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. Techip Technology Incorporated believes the informatie or original packing materials is true and correct to the completeness and accuracy of data in this form becausiler information is often protected from disclosure as mation is provided only as estimates of the average wide trace levels of dopants, metals, and non-metal materials is rovided by Microchip Technology Incorporate	chemical substance is NOT an ir document, there is no credible rany regulatory scheme world-wic flammability standard for plasticals/plastics/ ipped are made from polyvinyl common in this form concerning subside best of its knowledge and beliese it has been compiled based to strade secrets and some information in the secrets and some information of these parts and the avecterials contained within silicon of warranty, express or implied, with and its subsidiaries are contained and its subsidiaries are contained.	thentional ingredient in the semiconductor device eason to believe that the unavoidable impurity code. cs. You can access the UL iQTM family of database the code of the code	es to obtain a te o hold the packi gy Incorporated hnology Incorp ets provided by assemblers and components. T	est report at ing slip on the 's semicondu orated cannot ar raw material draw material these estimate	e outer box ctor devices guarantee suppliers. suppliers. suppliers do not		Doped Gold (mg) Total Nickel	7440-57-5 Total Plating on external leads (pins) 7440-02-0	100 100.00 % of Total Weight 94.50	
	nemical substance is absent from the list above, the operated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ng compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shiertain "reels" may be made from PVC plastic. In Technology Incorporated believes the information or protective and correct to the interior original packing materials is true and correct to the interior protects of the average with the provided only as estimates of the average with the provided only as estimates of the average with the provided by Microchip Technology Incorporated does not provide any inties provided by Microchip Technology Incorporate does not provide any inties provided by Microchip Technology Incorporated chip's quotations, sales order acknowledgement, and chip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of	chemical substance is NOT an ir document, there is no credible rany regulatory scheme world-wic flammability standard for plasticals/plastics/ ipped are made from polyvinyl common in this form concerning subsection in this for	itentional ingredient in the semiconductor device eason to believe that the unavoidable impurity code. cs. You can access the UL iQTM family of databast hloride (PVC) plastic. "Window envelopes" used introduced in the form. Microchip Technologi, as of the date listed in this form. Microchip Technologi, as of the date listed in Material Safety Data Sheation may not have been provided by subcontract rage weight of anticipated significant toxic metals devices (silicon IC) in the finished parts. Ith respect to the information provided in this decined in Microchip's standard terms and conditions clarations and shall not be liable for any damage:	es to obtain a te o hold the packi gy Incorporated thnology Incorp ets provided by assemblers and components. T laration. The exc s of sale. These s, direct or indire	est report at ing slip on the 's semicondu orated cannot raw material d raw material clusive, limite are provided i	e outer box ctor devices guarantee suppliers. suppliers. se do not d product n ntial or		Doped Gold (mg) Total Nickel Palladium	7440-57-5 Total Plating on external leads (pins) 7440-02-0	100 100.00 % of Total Weight 94.50	

AICROCHIP Semiconductor Device	Type: MN/HC/LC	: 10 (Lead) TDFN 3x3x0.8mm (QA)		nation Base . pper Alloy (0				eneous Materials: .pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	12.60	(mg) Total	Mold Compound	% ot Total Weight	60.00
Silica, vitreous (or fused)	60676-86-0	Mold Compound	51.000	10.710	510,000		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.220	1.096	52,200		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.600	0.756	36,000		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.180	0.038	1,800		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	30.572	6.420	305,720			Total	100.00	
Iron	7439-89-6	Lead Frame	0.752	0.158	7,520	6.72	(mg) Total	Lead Frame	% of Total Weight	32.00
Silver	7440-22-4	Lead Frame	0.610	0.128	6,096		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.040	0.008	400		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.026	0.006	264		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.059	0.012	590		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.015	0.003	150		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.005	0.001	50			Total	100.00	•
Phenolic hardener	92-88-6	Die Attach	0.000	0.000	2	0.02	(mg) Total	Die Attach	% of Total Weight	0.08
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.000	6	****	Silver	7440-22-4	73.80	
Silicon	7440-21-3	Chip (Die)	4.820	1.012	48,200		Epoxy Resin	9003-36-5	18.80	
Doped Gold	7440-57-5	Wire Bond	0.100	0.021	1.000		t-Butyl phenyl glycidyl ethe	3101-60-8	6.30	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	0.630	30.000		Phenolic hardener	92-88-6	0.30	
	7		100.000	21.000	1.000.000		Butvl cellosolve acetate	112-07-2	1	
	0.0210	TOTALS: q Total Mass			1,000,000		Butyl cellosolve acetate	112-07-2 Total]
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0210 comply with EU Directiv	TOTALS: a Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (1.01	Butyl cellosolve acetate (mg) Total Doped Silicon			
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). In oliance with the above EU Directives has been verified nemical substance is absent from the list above, the cology incorporated's knowledge and belief as of the	0.0210 comply with EU Directiv I via internal design cont	TOTALS: Q Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable	RoHS Recas	t Directive) a	nd with EU	1.01	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	4.82
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the conology incorporated's knowledge and belief as of the plical substance, if any, is not below the threshold of reing compounds used by Microchip meet the UL94 VO	0.0210 comply with EU Directiv I via internal design cont chemical substance is NC date of this document, the gulatory concern for any flammability standard fo	TOTALS: Q Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable	RoHS Recas	t Directive) a	nd with EU	0.02	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	4.82
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) upliance with the above EU Directives has been verified themical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of rolling compounds used by Microchip meet the UL94 V0 (1/l/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shi	0.0210 comply with EU Directiv I via internal design cont themical substance is NC date of this document, the gulatory concern for any flammability standard for als/plastics/	TOTALS: d Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. or an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable or regulatory scheme world-wide.	RoHS Recas and, to the I impurity co	t Directive) a pest of Micro oncentration of a test report	nd with EU chip of the	· · ·	(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	4.82
is semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), apliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of red in the compounds used by Microchip meet the UL94 of ing compounds used by Microchip meet the UL94 of ing compounds used by Microchip meet the UL94 of ing compounds used by Microchip meet the UL94 of ing protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatices in their original packing materials is true and cornot guarantee the completeness and accuracy of data material suppliers. Supplier information is often prote raw material suppliers. Information is provided only a	0.0210 comply with EU Directiv I via internal design cont chemical substance is NC date of this document, th gulatory concern for any flammability standard for als/plastics/ pped are made from poly on in this form concernin act to the best of its know n this form because it ha cted from disclosure as to s estimates of the average	TOTALS: Q Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide. P plastics. You can access the UL iQTM family of databas	and, to the It is impurity co es to obtain to hold the p gy Incorporachip Techno al Safety Daterovided by sated signific	pest of Microconcentration of a test report acking slip of ated's semicology Incorporate Microcontract a sant toxic metal	chip of the at n the outer onductor rated vided by ssemblers tals	· · ·	(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.10
s semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informatices in their original packing materials is true and cornot guarantee the completeness and accuracy of data imaterial suppliers. Supplier information is often prote raw material suppliers. Information is provided only a apponents. These estimates do not include trace levels or crochip Technology Incorporated does not provide any	0.0210 comply with EU Directiv I via internal design cont chemical substance is NC date of this document, th gulatory concern for any flatmorability standard for als/plastics/ pped are made from poly on in this form concernin act to the best of its know in this form because it ha tots estimates of the averag of dopants, metals, and in warranty, express or imp proporated and its subsidi	TOTALS: Q Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable or regulatory scheme world-wide. I plastics. You can access the UL iQTM family of databas evinyl chloride (PVC) plastic. "Window envelopes" used to the g substances restricted by RoHS in Microchip Technolo eledge and belief, as of the date listed in this form. Micro s been compiled based on the ranges provided in Materi rade secrets and some information may not have been p e weight of these parts and the average weight of anticip	and, to the Interpretation in the Interpreta	pest of Microor oncentration of a test report acking slip of a sheets protect as Sheets protect acking slip of a sheet pr	chip of the at n the outer onductor rated vided by issemblers tals rts.	· · ·	(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.10
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), apliance with the above EU Directives has been verified themical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of reling compounds used by Microchip meet the UL94 V0 (Julicom/global/eng/pages/offerings/industries/chemical aubstance, if any is not below the threshold of reling compounds used by Microchip meet the UL94 V0 (Julicom/global/eng/pages/offerings/industries/chemical aubstance) in which the specific product is shi and certain "reels" may be made from PVC plastic. occhip Technology Incorporated believes the informations in their original packing materials is true and corrupt guarantee the completeness and accuracy of data is material suppliers. Supplier information is often proteraw material suppliers. Information is provided only a ponents. These estimates do not include trace levels of occhip Technology Incorporated does not provide any luct warranties provided by Microchip Technology Incorporated for a continuity of the provided in Microchip's quotations, sales order acknowled occhip disclaims any duty to notify users of updates or	0.0210 comply with EU Directiv I via internal design contended in the substance is NC date of this document, the gulatory concern for any flammability standard for als/plastics/ pped are made from polyon in this form concerning to to the best of its known in this form because it hat cted from disclosure as to sestimates of the average of dopants, metals, and nowarranty, express or imporporated and its subsiding gement, and invoices. changes to Material Conforthe users' reliance on	TOTALS: g Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable or regulatory scheme world-wide. I plastics. You can access the UL iQTM family of databas evinyl chloride (PVC) plastic. "Window envelopes" used to g substances restricted by RoHS in Microchip Technolo eledge and belief, as of the date listed in this form. Micro s been compiled based on the ranges provided in Materi rade secrets and some information may not have been p e weight of these parts and the average weight of anticip on-metal materials contained within silicon devices (silic lied, with respect to the information provided in this dec	and, to the Is impurity constant to hold the property of the property of the provided by successful to the property of the property of the property of the provided by successful to the property of the property of the provided by successful the provided by successful the provided by the provi	pest of Microo oncentration of a test report acking slip o ated's semico logy Incorpo ta Sheets pro subcontract a ant toxic met e finished pai	chip of the at n the outer onductor orated vided by ussemblers tals trts. mited ure equential	0.02	(mg) Total Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.10

MN_HC_LC 10-TDFN 7:06 PM : 8/8/2012

MICROCHIP				nation Base A				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device 1	ype: MUY 08 (Lead)	• •								e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	5.37	(mg) Total	Mold Compound	% ot Total Weight	67.95
Silica, fused	60676-86-0	Mold Compound	61.155	4.831	611,550		Silica, fused	60676-86-0	90.00	ĺ
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.296	0.260	32,956	Ероху	Resin (NLP # 500-033-5)	Trade Secret	4.85]
Phenolic Resin	Trade Secret	Mold Compound	3.296	0.260	32,956		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.204	0.016	2,039		Carbon Black	1333-86-4	0.30	1
Copper	7440-50-8	Lead Frame	20.779	1.642	207,786			Total		
Tin	7440-31-5	Lead Frame	0.053	0.004	533	1.69	(mg) Total	Lead Frame	% of Total Weight	21.33
Silver	7440-22-4	Lead Frame	0.406	0.032	4,063		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.038	0.003	384		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.053	0.004	533		Silver	7440-22-4	1.91	
Silver	7440-22-4 Trada Sparet	Die Attach	1.911 0.441	0.151	19,110		Zinc	7440-66-6	0.18	l
Acrylate resins Proprietary	Trade Secret	Die Attach		0.035	4,410		Chromium	7440-47-3	0.25	l
Treated silica	Trade Secret	Die Attach	0.049	0.004	490			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.049	0.004	490	0.19	(mg) Total	Die Attach	% of Total Weight	2.45
Silicon	7440-21-3	Chip (Die)	7.350	0.581	73,500		Silver		78	
Gold	7440-57-5	Wire Bond	0.750	0.059	7,500	P	Acrylate resins Proprietary	Trade Secret	18	
Nickel	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627		Treated silica	Trade Secret	2	l
Palladium	7440-05-03	Plating on external leads (pins)	0.005	0.000	55	Hetero	ocyclic organic compound		_	<u> </u>
JGPSSI (D02) (Gold)	7440-57-5	Plating on external leads (pins)	0.002 LS: 100.000	0.000 7.900	18 1.000.000			Total		
						0.58				7.35
s semiconductor device and its homogenous materials con	0.0079 g To				, ,	0.30	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
s semiconductor device and its homogenous materials con 2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified vi	nply with EU Directive 2002/95	otal Mass /EC (RoHS Directive), EU Directive 2011/65/EU (, ,	0.06		7440-21-3	100	
2/53/EC (End-of-Life Vehicles (ELV) Directive).	nply with EU Directive 2002/95 a internal design controls, sup nical substance is NOT an inte ument, there is no credible rea	otal Mass /EC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device	RoHS Recast Directive)	and with EU C	Directive		Doped Silicon	7440-21-3 Total	100	
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the cher proprated's knowledge and belief as of the date of this doc	nply with EU Directive 2002/95 a internal design controls, sup nical substance is NOT an inte ument, there is no credible rea scheme world-wide. nmability standard for plastics	otal Mass /EC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device son to believe that the unavoidable impurity co	ROHS Recast Directive) and, to the best of Microcentration of the chem	and with EU C ochip Technol ical substance	Directive		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.75
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified victories with the above EU Directives has been verified victories and self-end the list above, the cheroprorated's knowledge and belief as of the date of this docow the threshold of regulatory concern for any regulatory ding compounds used by Microchip meet the UL94 V0 flar	nply with EU Directive 2002/95 a internal design controls, sup nical substance is NOT an inte ument, there is no credible rea scheme world-wide. nmability standard for plastics plastics/	pital Mass JEC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device son to believe that the unavoidable impurity co You can access the UL iQTM family of databa	RoHS Recast Directive) and, to the best of Micro acentration of the chem es to obtain a test repo	and with EU C ochip Technol ical substance	Oirective ogy e, if any, is not		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.75
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified vichemical substance is absent from the list above, the cher proprated's knowledge and belief as of the date of this doctow the threshold of regulatory concern for any regulatory ding compounds used by Microchip meet the UL94 V0 flarbillossiful. Will.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe	nply with EU Directive 2002/95 a internal design controls, sup nical substance is NOT an inte ument, there is no credible rea scheme world-wide. nmability standard for plastics plastics/ d are made from polyvinyl chl on this form concerning substa knowledge and belief, as of th sed on the ranges provided in ion may not have been provide titicipated significant toxic mel	pital Mass /EC (RoHS Directive), EU Directive 2011/65/EU (piler declarations, and /or analytical test data. Intional ingredient in the semiconductor device son to believe that the unavoidable impurity co. You can access the UL iQTM family of databa oride (PVC) plastic. "Window envelopes" used the control of the cont	and, to the best of Microcontration of the chem es to obtain a test repo o hold the packing slip gy Incorporated's semic Incorporated cannot g teerial suppliers. Supplisuppliers. Information is	and with EU C ochip Technol ical substance at at on the outer b conductor dev uarantee the c er information s provided on	ogy a, if any, is not oox and certain rices in their completeness and its often ly as estimates of	0.06	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100 100.00	0.75
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified vichemical substance is absent from the list above, the cher proprieted's knowledge and belief as of the date of this doc with threshold of regulatory concern for any regulatory siding compounds used by Microchip meet the UL94 V0 flar by/ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipped is "may be made from PVC plastic. Trochip Technology Incorporated believes the information into packing materials is true and correct to the best of its uracy of data in this form because it has been compiled be tected from disclosure as trade secrets and some informat average weight of these parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and the average weight of an account of the parts and	an internal design controls, sup- nical substance is NOT an inte- ument, there is no credible rea- scheme world-wide. In mability standard for plastics plastics/ d are made from polyvinyl chl in this form concerning substa- knowledge and belief, as of th sed on the ranges provided in ion may not have been provide itticipated significant toxic met nished parts.	pital Mass /EC (RoHS Directive), EU Directive 2011/65/EU (piler declarations, and /or analytical test data. Intional ingredient in the semiconductor device son to believe that the unavoidable impurity co . You can access the UL iQTM family of databa oride (PVC) plastic. "Window envelopes" used nees restricted by RoHS in Microchip Technolog daterial Safety Data Sheets provided by raw m id by subcontract assemblers and raw material als components. These estimates do not include respect to the information provided in this dec	and, to the best of Microcentration of the chem es to obtain a test repo o hold the packing slip gy Incorporated's semic Incorporated cannot g terial suppliers. Suppli suppliers. Information is e trace levels of dopant	and with EU D pochip Technol ical substance rt at on the outer be conductor dev uarantee the c er information s, metals, and limited produ-	ogy e, if any, is not oox and certain rices in their completeness and is often ly as estimates of non-metal ct warranties	0.06	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.75
2/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified vichemical substance is absent from the list above, the cher proporated's knowledge and belief as of the date of this doc ow the threshold of regulatory concern for any regulatory is ding compounds used by Microchip meet the UL94 V0 flar billion of the complete of the UL94 V0 flar billion of the complete of the UL94 V0 flar billion of the complete of the UL94 V0 flar billion of the complete of the UL94 V0 flar billion of the complete of the UL94 V0 flar billion of the UL94 V0 fla	nply with EU Directive 2002/95 a internal design controls, sup- nical substance is NOT an inte- ument, there is no credible rea- scheme world-wide. nmability standard for plastics plastics/ d are made from polyvinyl chl n this form concerning substa- knowledge and belief, as of th sed on the ranges provided in ion may not have been provide ticipated significant toxic men inished parts. ranty, express or implied, with diaries are contained in Micro- anges to Material Content Dec-	pital Mass /EC (RoHS Directive), EU Directive 2011/65/EU (piler declarations, and /or analytical test data. Intional ingredient in the semiconductor device son to believe that the unavoidable impurity co You can access the UL iQTM family of databa oride (PVC) plastic. "Window envelopes" used nees restricted by RoHS in Microchip Technolog e date listed in this form. Microchip Technolog e date listed in this form. Microchip Technolog at the data semiplers and raw material als components. These estimates do not include respect to the information provided in this dec chip's standard terms and conditions of sale. To arations and shall not be liable for any damage	and, to the best of Microcontration of the chem es to obtain a test repo o hold the packing slip gy Incorporated's semic Incorporated cannot g terial suppliers. Suppli suppliers. Information i e trace levels of dopant aration. The exclusive, ese are provided in Mic	and with EU Cochip Technolical substance at at on the outer beconductor devuarantee the cer information s provided on s, metals, and limited produ rocchip's quotes	ogy p, if any, is not oox and certain rices in their completeness and us often ly as estimates of non-metal ct warranties ations, sales otherwise,	0.06	Doped Silicon (mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight 95.73	0.75

MUY 08 UDFN 7:06 PM : 8/8/2012

Semiconductor Device Type: PH 144 (aus) LOFP anotest warm page Basic Substance CAS Number Sub-Component Weight mylpart ppm Sub-Component Sub-Component Weight mylpart ppm Sub-Component Sub-	MICROCHIP				nation Base A				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
State Cubstance	Semiconductor Device T	「ype: PH 144 (Lead) LQFI	20x20x1.4mm (H8)								e3
Siles tremos (or March) 1,000	Rasic Substance	CAS Number		,	mg/part	nnm	439.61	(mg) Total	Mold Compound	% ot Total Weight	68.23
Spoor period Track Secret Most Compound 6,598 39,266 69,390 14,400 1								Silica vitreous (or fused)	60676-86-0	85.00	ī
Prientice Reas											
Cathon Black 1333-66-4 Model Compound 2,005 1,316 2,047 Thin 7440-515-5 Lude Firere 2,865-67 Thin 7440-506-5 Lude Firere 0,0527 The 7440-506-6 Lude Firere 0,0526 The 7440-506-6 Lude Firer											1
Copper											1
Tin 1, 1440-31-5 Lead Farme 0.099 0.440 692 19.28 mon Total Lead Farme 2.097 2.00								Carbon Black			4
Silver 7440-22-4 Leaf Frame 0.527 3.596 5.271 Concerns 7440-22-4 Concerns 7440-22-4 Concerns 7440-27-3 Concerns 7440-47-3 Conce							170 20	(mg) Total			
Zec 7440-56-6 Lead Frame 0.050 0.321 488 Chromium 7440-73 Lead Frame 0.058 0.454 692 Silver 7440-224 De Attach 0.357 2.300 3.570 Alphalic acid anhydrich (FTM-ALET Track Score De Attach 0.051 0.359 510 Codd 7440-73 Chep (De) 0.260 1.3460 2.090 2.29 1.000 Codd 7440-73 Chep (De) 0.200 1.3460 2.090 2.29 1.000 2.29 2.000 2.200 2.000	IIII	7440-31-5	Leau Flaille	0.009	0.440	092	178.28	(mg) rotai	Lead Frame	% of Total Weight	27.67
Zec 7440-56-6 Lead Frame 0.050 0.321 488 Chromium 7440-73 Lead Frame 0.058 0.454 692 Silver 7440-224 De Attach 0.357 2.300 3.570 Alphalic acid anhydrich (FTM-ALET Track Score De Attach 0.051 0.359 510 Codd 7440-73 Chep (De) 0.260 1.3460 2.090 2.29 1.000 Codd 7440-73 Chep (De) 0.200 1.3460 2.090 2.29 1.000 2.29 2.000 2.200 2.000	Cilver	7440 22 4	Lood Frame	0.527	2 200	E 074		0	7440 50 0	07.40	
Chromium 1740-27-3 Load Frame 0.069 0.446 829 Silver 1740-27-3 10-0 De Attach 0.577 2.30 3.57 Figure 1740-27-4 De Attach 0.057 0.570 1.000 Aliphate and arrhythde/17PU-ALET 17845 Secret De Attach 0.010 0.657 0.200 500 Figure 1740-27-4 1.000 Figure 1740-27-5 1.000 Figure 174											4
Silver 1744-022-4 Die Attach 0.357 2.300 3.570 Epony resil. Trade Societ Die Attach 0.102 0.575 1.200											4
Epony resin Trade Secret Die Affach 0.102 0.657 1,000											
Alphalic acid anylydride/ TPU-ALET Trade Secret Dischards (1904) At the Sistion Trade Secret Sisting Trade Secret											
Silicon 7440-21-3 Chip (De) 2.930 13-466 20.900 2.320 43.900 2.230 2.32 (mg) Total Mass 7440-21-5 (mg) Total Mass 100.000 4.000 1.00		Trade Secret	Die Attach					Chromium	7440-47-3	0.25]
Gold 7440,57-5 Wire Bond 1740,58-1 Petrgore seemed leads (pre-) - Malter Tri a managed at 150°C lear Into 2,280 1,280 1,200 1,	Aliphatic acid anhydride / TPU-ALET	Trade Secret	Die Attach	0.051	0.329	510			Total	100.00	ī
Gold 744057-5 Wire Bond 744057-5 Wire Bond 7240 15 Planguage external tasks (prior) - Matter Tin 1 Planguage external tasks (prior) - Matter Tin 1 remarked at 150°C for 1 box 0 1,200 (prior) - Matter Tin 1 remarked at	Silicon	7440-21-3	Chip (Die)	2.090	13.466	20,900	3.29	(mg) Total	Die Attach	% of Total Weight	0.51
Tin	Gold	7440-57-5	Wire Bond	0.280	1.804	2.800			7440-22-4	70	1
0.6443 g Total Mass 107ALS: 100.000 644.300 1,000.000 10.6443 g Total Mass 100.000 644.300 1,000.000 10.6443 g Total Mass 10.6403 g Total Mass 10.64043 g Total Mass 10.6405 g Total M		7440-31-5 Plating o	external leads (nins) - Matte Tin / annealed at 150°C for 1 hour								
O.6443 g Total Mass Interview 2002/59/EC (End-of-Life Vehicles (ELV) Directive) 13.47 Total (mg) 14.40 21:3 100 15.41 Total (mg) 15.41 Total (mg) 15.42 Total (mg) 15.42 Total (mg) 15.43 (mg) 15.43 (mg) 15.43 (mg) 15.43 (mg) 15.43 (mg) 15.44 21:3 100 15.45 (mg) 15.45 (mg) 15.45 (mg) 15.45 (mg) 15.45 (mg) 15.45 (mg) 15.47 Total (mg)	1111	7 1 10 0 1 0 Tidding 0					Alinhatic				1
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2017/95/EC (RoHS Directive) 2017/95/EC (RoHS Directiv		0.0440 T-44			0000	.,000,000	, aipiratio	add annyandor in orace.			71
ining compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at 1.80 (mg) Total Wire Bond % of Total Weight 0.28 (mg) Total Wire Bond % of Total Weight 0.28 (mg) Total Wire Bond % of Total Weight 0.28 (mg) Total Wire Bond % of Total Weight 0.28 (mg) Total Total 7.40-57-5 100 1.80 (mg) Total Wire Bond % of Total Weight 0.28 (mg) Total Total 7.40-57-5 100 1.80 (mg) Total 7	· :hemical substance is absent from the list above, the ch	nemical substance is NOT an in	entional ingredient in the semiconductor device					Doped Silicon			
and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ces in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot rantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Shests provided by raw perial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. se estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. ochip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited luct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration, sales order acknowledgement, and invoices. 7.86 (mg) Total Plating on external leads (pins) - Matter Tin / Annealed at 150°C for 1 which is provided to the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third party test reports or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third party test reports o	ling compounds used by Microchip meet the UL94 V0 fl ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	ammability standard for plastic als/plastics/	s. You can access the UL iQTM family of databa		•		1.80				0.28
cochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ces in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot rantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by Taw are rail suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. see estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Total Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 / annealed at 150°C for 1 / hour Total 100.00 Total 100.00 Total 100.00 Total 100.00	and certain "reels" may be made from PVC plastic.							Doped Gold			
duct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matter Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matter Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matter Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matter Tin / annealed at 150°C for 1 / hour 7.86 (mg) Total leads (pins) - Matter Ti	rices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for terial suppliers. Supplier information is often protected f r material suppliers. Information is provided only as esti	ct to the best of its knowledge a rm because it has been compile from disclosure as trade secrets mates of the average weight of	nd belief, as of the date listed in this form. Micr d based on the ranges provided in Material Safe and some information may not have been prov hese parts and the average weight of anticipate	ochip Technol ety Data Sheets vided by subco d significant to	ogy Incorpora provided by entract assem exic metals co	ited cannot raw blers and			, coa	.00.00	
erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports S) or of this Certificate of Compliance for semiconductor products. Total 100.00	duct warranties provided by Microchip Technology Inco	rporated and its subsidiaries ar					7.86	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.22
	nerwise, suffered by users or third parties as a result of th	ne users' reliance on the inform						Tin	7440-31-5	100.00	
									Total	100.00	1

PH 144 LQFP 7:06 PM : 8/8/2012

MICROCHIP Semiconductor David	ce Type: PQ 44 (Lead) M	OFP (1) 11 - 1		nation Base A pper Alloy (C				mogeneous Materials (e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	ce Type: PQ 44 (Lead) M	"Contained In"	% Total							es
Basic Substance	CAS Number	Sub-Component	% i otai Weight	mg/part	ppm	314.89	(mg) Total	Mold Compound	% ot Total Weight	64.87
Silica, vitreous (or fused)	60676-86-0	Mold Compound	55.140	267.653	551.395		Silica, vitreous (or fused)	60676-86-0	85.00	1
Epoxy Resin	Trade Secret	Mold Compound	5.644	27.395	56,437		Epoxy Resin	Trade Secret	8.70	1
Phenolic Resin	Trade Secret	Mold Compound	3.892	18.893	38,922		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.195	0.945	1,946		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.106	131.573	271,056			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.723	3.509	7,229	138.15	(mg) Total	Lead Frame	% of Total Weight	28.46
Silver	7440-22-4	Lead Frame	0.475	2.306	4,750		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.128	0.622	1,281		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.028	0.138	285		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.556	2.699	5,561		Silicon	7440-21-3	0.45	
ANHYDRIDE	Trade Secret	Die Attach	0.060	0.293	603		Magnesium	7439-95-4	0.10	
EPOXY RESIN	Trade Secret	Die Attach	0.054	0.260	536			Total	100.00	
Silicon	7440-21-3	Chip (Die)	3.970	19.271	39,700	3.25	(mg) Total	Die Attach	% of Total Weight	0.67
Gold	7440-57-5	Wire Bond	0.210	1.019	2,100		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	8.834	18,200		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	485.410	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.4854	g Total Mass					•	Total	100.00	
is semiconductor device and its homogenous materia	is comply with EU Directive	2002/95/EC (ROHS Directive). EU Directive 2011/65/EU (Ro								
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifications.	•	, ,	nio Recast Dii	ective) and wi	th EU	19.27	Total (mg)	Chip (Die)	% of Total Weight	3.97
mpliance with the above EU Directives has been verific	ed via internal design contro	ols, supplier declarations, and /or analytical test data.		·		19.27	Total (mg) Doped Silicon	7440-21-3	100	
mpliance with the above EU Directives has been verific chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for	ed via internal design control chemical substance is NOT s document, there is no cred any regulatory scheme worl	ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device are ible reason to believe that the unavoidable impurity conductive.	nd, to the best entration of th	of Microchip T ee chemical su	Technology	19.27				
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PQ 44 MQFP 7:06 PM : 8/8/2012

AICROCHIP Semiconductor Device Type	: MS and UA	8 (Lead) MSOP 3x3mm (A3)		nation Base pper Alloy (0	-			ogeneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	17.364	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.501	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Silver (Ag)	7440-22-4	75	
Doped Gold	7440-57-5	Wire Bond	0.200	0.051	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.320	12,500	Di	glycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	25.600	1,000,000		Modified Amine	827-43-0	4	
semiconductor device and its homogenous materials comply		g Total Mass		t Directive) a	nd with EU		, \ -	Total	100.00	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive	g Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU		t Directive) a	nd with EU	1.92	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intended the chamical substance is absent from the list above, the chemical substance is absent from the list above, the chamical substance is absent from the list above, the chamical substance is absent from the list above, the chamical substance is absent from the list above.	with EU Directivernal design contents I substance is NC this document, the	g Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU orols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable	(RoHS Recas	est of Microc	hip	1.92	,	Chip (Die)	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intended in the list above, the chemical substance is absent from the list above, the chemical nology incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulatoring compounds used by Microchip meet the UL94 V0 flamma	with EU Directivernal design cont I substance is NC this document, try concern for any	g Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU e rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	(RoHS Recases	est of Microc ncentration c	hip of the	1.92	,	Chip (Die) 7440-21-3	% of Total Weight	7.5
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MS UA 08 MSOP 7:07 PM : 8/8/2012

Semiconductor Device Type: UN 10 (seed MSOP axiome (87.6)) Basic Substance OAS Number Story Among Sing, Window Sub-Component Weight mighant ppin Sing, Window Sub-Component Sing, Window Sub-Component Sing, Window Sub-Component Weight mighant ppin Sing, Window Sub-Component Sing, Window Sub-Component Sing, Window Sub-Component Sing, Window Sub-Component Sing, Window	ICROCHIP Semicondustes Device Tun	UN 40	MCOD		nation Base A	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	Semiconductor Device Typ	e: UN 10 (Lead)	, ,								es
Silica virtorial Silica virt	Pasia Subatanaa	CAC Number					6.66	(mg) Total	Mold Compound	% ot Total Weight	28.71
Export Reart Not Doronne, Not disasternory intoided Trade Secret Model Compound 1,756 0.456 17,555			·		<u> </u>			077	00070.00.0	05.00	1
Phenoid Respir (No. 1967 (1.505), No. disastromy tributes) Tribute Secret Model Compound 0.1736 0.405 17.585 0.405 17.585 1.005 1.005 1.755 1.005 1.											4
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Nickel 7440-02-0 Lead Frame 0.751 0.174 7.505 1.00-00							ł	Carbon Black			1
Silver 7440-22-4 Lead Frame 0.751 0.174 7.505 Silcen 7440-22-4 Lead Frame 0.751 0.174 7.505 Magnesium 7459-95-4 Lead Frame 0.045 0.010 450 Magnesium 7459-95-4 1.57 Magnesium 7459-95-4 1.57							10.42	(mg) Total			
Silicon 7440-21-3 Lead Frame 0.202 0.047 2.044 Silver 7440-22-4 De Attach 0.661 0.159 6.005 Silver 7440-22-4 De Attach 0.661 0.159 6.005 Arylytte ream Projectatry 1766-5 Secret De Attach 0.671 0.159 6.005 Heterocyptic corpanic compound 7440-21-3 Chip (Die) 2.800 0.655 28,000 Gold 7440-57-5 Silcon 7440-57-5 Transport 1.7440-57-5 Transp							10.43				1 44.97
Magnetium 1439-994 Leaf Firme 0.045 0.010 450 500 130 6.00							l				1
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Silicon 7440213 Chip (Die) 2,800 0,500 28,000 Lists 6,800 1,500 6,800 1,500 1,							0.10	(mg) Total			
Gold 7440-57-5 Butting on external leads (prof Malts Turn 240-31-5 Butting on external leads (prof Malts Turn 240-3							0.10				1 0.77
Tin Tyt40315 Pattop on administration loss (prop.) - Marke Tin Agreeded at 150°C for 1 too 22.070 5.120 22.0700 100,000 22.0700 100,00							l				-
O.0232 g Total Mass O.0235 G Mass Date of the Conference of the Conf											
D.023 g Total Mass Total (mg) To	1111	7440-31-3					Hote				
temiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (ROHS Directive), EU Directive) and with EU dive 2002/95/EC (End-of-Life Vehicles (ELV) Directive). It wis 2002/95/EC (End-of-Life Vehicles (ELV) Directive) in the last substance is absent from the list above, the chemical substance is not redible reason to believe that the unavoidable impurity concentration of the clast substance. It any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. In go compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at uncomploading/pages/offerings/industries/chemicals/plastics/ in the properties of the date of th		0.0000		100.000	23.200	1,000,000	i iete	socyclic organic compound			<u> </u>
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated substance is in this form concerning substances restricted by RoHS in Microchip Technology Incorporated substance is restricted to the best of the knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the teal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. In go compounds used by Microchip meet the ULAY 0f Iammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at value of the certain "reels" may be made from PVC plastic. In which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer not certain "reels" may be made from PVC plastic. Chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology incorporated cannot meet the completeness and accuracy of data in this form because it has been complied based on the ranges provided by subcontract assemblers and taterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and sterilar subpliers. Information is provided only acestimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology incorporated and its subsidiaries are contained within silicon devices (silicon IC) in the finished parts. Chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology incorporated and its subsidiaries are									TOLAI	100.00	
analogy incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the incal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. If ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ing compounds used by Microchip Technology incorporated in this form beauting in the outer and certain "reals" may be made from PVC plastic. In the planta in the product of most of the packing silp on the outer and certain "reals" may be made from PVC plastic. In the planta in the packing silp on the outer and certain "reals" may be made from PVC plastic. In the planta in the packing silp on the outer and certain "reals" may be made from PVC plastic. In the planta in the packing silp on the outer and certain "reals" may be made from PVC plastic. In the planta in the packing silp on the outer and certain "reals" may be made from PV							0.65	Total (mg)	Chip (Die)	% of Total Weight	2.8
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ces in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot rantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw erial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. see estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited fluct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's auditations, sales order ackn	, , , ,	internal design cont	rols, supplier declarations, and /or analytical test data.				0.65		,	-	2.8
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chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor see in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot interest the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw rial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and naterial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. e estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. In provided object to provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided or controlly in the substitution of the substit	ollance with the above EU Directives has been verified via nemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regulang compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/p	ical substance is NC of this document, the tory concern for any mability standard for plastics/	or an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable regulatory scheme world-wide.	le impurity co	ncentration of a test report a	the		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
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erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports S) or of this Certificate of Compliance for semiconductor products.	pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the cheminology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flaming compounds used by Microchip meet the UL94 V0 flaming/ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in the interioriginal packing materials is true and correct to antee the completeness and accuracy of data in this form brial suppliers. Supplier information is often protected from naterial suppliers. Information is provided only as estimater	ical substance is NC of this document, the tory concern for any mability standard for lastics/ are made from poly this form concerning the best of its know ecause it has been disclosure as trade es of the average we	of an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable regulatory scheme world-wide. To plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used ag substances restricted by RoHS in Microchip Technologies and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been provight of these parts and the average weight of anticipate.	le impurity col ses to obtain to hold the pa ogy Incorpora ochip Technol ty Data Sheet vided by subco d significant to	a test report a acking slip on ted's semicor ogy Incorpora s provided by portract asser- portract asser-	t the outer adductor raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	. 0.68
	pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the cheminology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flami/ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Techip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form be rial suppliers. Supplier information is often protected from material suppliers. Provided only as estimate estimates do not include trace levels of dopants, metals, eachip Technology Incorporated does not provide any warrauct warranties provided by Microchip Technology Incorporated warranties provided only Microchip Technology Incorporated warranties provided by Microchip Technology Incorporated warranties provided only Microchip Technology Incorporated warranties provided warranties provided warranties provided warranties provided warranties wa	ical substance is NC of this document, the tory concern for any mability standard for elastics/ are made from poly this form concerning the best of its know because it has been disclosure as trade so of the average we and non-metal matunty, express or imp ated and its subsidi	of an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used ag substances restricted by RoHS in Microchip Technologiege and belief, as of the date listed in this form. Microchipled based on the ranges provided in Material Safe secrets and some information may not have been provight of these parts and the average weight of anticipateerials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this detection.	to hold the pa ogy Incorpora ochip Technol ty Data Sheet vided by subco d significant to finished parti-	a test report a acking slip on ted's semicor ogy Incorpors s provided by ontract assem oxic metals cos. exclusive, lim	the outer adductor ated cannot raw blers and omponents.	0.16	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	: 0.68
	pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem nology incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regula ing compounds used by Microchip meet the UL94 V0 flami/ful.com/global/eng/pages/offerings/industries/chemicals/pprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information in zes in their original packing materials is true and correct to antee the completeness and accuracy of data in this form the rial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate eestimates do not include trace levels of dopants, metals, pochip Technology Incorporated does not provide any warra uct warranties provided by Microchip Technology Incorpor crochip's quotations, sales order acknowledgement, and in pochip disclaims any duty to notify users of updates or charwise, suffered by users or third parties as a result of the users.	ical substance is NC of this document, the tory concern for any mability standard for lastics/ are made from poly this form concerning the best of its know ecause it has been disclosure as trade as of the average we and non-metal maturity, express or imp ated and its subsidi rvoices. uggs to Material Con sers' reliance on the	Tan intentional ingredient in the semiconductor device the interest in the control of the contro	ses to obtain to hold the particular acceptance of the particular acceptan	a test report a acking slip on ted's semicor ogy Incorpors s provided by ontract assem over act assem over act assem sale. These are direct, consect	the outer ductor ated cannot raw blers and omponents. hited e provided	0.16	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	22.07

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NICROCHIP Semiconductor Device	 e Type: Pand PA 8 (ι	ead) PDIP (Small Outline300") (C4 / CK)		nation Base . pper Alloy (0			•	ogeneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574.560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468	51.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.064	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.550	2.678	5,502		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100		Phosphorous	7723-14-0	0.08	
Diluent	3101-60-8	Die Attach	0.055	0.268	550			Total	100.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220	3.65	(mg) Total	Die Attach	% of Total Weight	0.75
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110		Silver	7440-22-4	73.36	
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resin	9003-36-5	14.67	
Silicon	7440-21-3 7440-57-5	Chip (Die) Wire Bond	7.500 0.200	36.503 0.973	75,000 2,000		Diluent	3101-60-8	7.33 2.93	
Doped Gold Tin	7440-57-5 7440-31-5		1.250	6.084	12,500		Phenolic hardener Amine type hardener	Trade secret 827-43-0	2.93 1.47	
IIII	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	486.700	1,000,000		Dicyandiamide		0.24	
	0.4007	q Total Mass	100.000	400.700	1,000,000		Dicyandiamide	461-58-5 Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) upliance with the above EU Directives has been verifie		, , , ,		•		36.50	(mg) Total	Chip (Die)	% of Total Weight	7.5
	chemical substance is NOT	ols, supplier declarations, and /or analytical test data. Fan intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable					Doped Silicon	7440-21-3 Total	100 100.00	7.5
hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemi	chemical substance is NOT e date of this document, the regulatory concern for any of flammability standard for icals/plastics/	F an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable	e impurity co	ncentration o	of the	0.97	Doped Silicon (mg) Total Doped Gold	7440-21-3	100	0.2
hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati ices in their original packing materials is true and corr not guarantee the completeness and accuracy of data material suppliers. Information is provided only a raw material suppliers. Information is provided only a	chemical substance is NOTe date of this document, the regulatory concern for any of flammability standard for icals/plastics/ ipped are made from polyvion in this form concerning rect to the best of its knowl in this form because it has acted from disclosure as trass estimates of the average	F an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databas	e impurity co ses to obtain to hold the pa gy Incorpora chip Techno ail Safety Dat provided by so pated signific	a test report acking slip or acking slip or atted's semico logy incorpor a Sheets provide the contract a ant toxic met	of the at n the outer inductor rated vided by ssemblers als	0.97	(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL.94 V0 c://ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatices in their original packing materials is true and cornot guarantee the completeness and accuracy of data material suppliers. Supplier information is often prote raw material suppliers. Information is provided only apponents. These estimates do not include trace levels tochip Technology Incorporated does not provide any	chemical substance is NOTe date of this document, the regulatory concern for any of flammability standard for icals/plastics/ iipped are made from polyvion in this form concerning rect to the best of its knowl in this form because it has ected from disclosure as trase estimates of the average of dopants, metals, and no warranty, express or implicorporated and its subsidial	If an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database viryl chloride (PVC) plastic. "Window envelopes" used to g substances restricted by RoHS in Microchip Technoloedge and belief, as of the date listed in this form. Microbeen compiled based on the ranges provided in Materiade secrets and some information may not have been p weight of these parts and the average weight of anticip	e impurity co ses to obtain to hold the pa gy Incorpora chip Techno ial Safety Dat iorovided by s pated signific con IC) in the	a test report acking slip of ted's semico logy Incorpor a Sheets pro- ubcontract a ant toxic met e finished par	at n the outer nductor rated vided by ssemblers als ts. mited	0.97	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
anology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ling compounds used by Microchip meet the UL94 V0 (Jul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatices in their original packing materials is true and corrotot guarantee the completeness and accuracy of data material suppliers. Supplier information is often protraw material suppliers. Information is provided only a ponents. These estimates do not include trace levels ochip Technology Incorporated does not provide any luct warranties provided by Microchip Technology Incorporated complete incorchip's quotations, sales order acknowledgement, ochip disclaims any duty to notify users of updates of	chemical substance is NOTe date of this document, the regulatory concern for any of flammability standard for icals/plastics/ ipped are made from polyviolon in this form concerning rect to the best of its knowl in this form because it has acted from disclosure as tras estimates of the average of dopants, metals, and no warranty, express or implicorporated and its subsidia and invoices.	T an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used to g substances restricted by RoHS in Microchip Technolo edge and belief, as of the date listed in this form. Microbeen compiled based on the ranges provided in Materiade secrets and some information may not have been powered weight of these parts and the average weight of anticipin-metal materials contained within silicon devices (siliced, with respect to the information provided in this deceived.	e impurity co ses to obtain to hold the pa gy Incorpora chip Techno ial Safety Dat provided by s rated signific con IC) in the laration. The onditions of s	a test report acking slip or ted's semico logy Incorpor a Sheets provubcontract a ant toxic met efinished par exclusive, lin sale. These a	at n the outer inductor rated vided by ssemblers als ts. mited re provided		(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100	0.2

P PA 08 PDIP 7:07 PM : 8/8/2012

Basic Substance	CROCHIP Semiconductor Device Tv	ne. Pand PF 14 (ead) PDIP (Small Outline300") (D2 / DF)		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	Ocimiconductor Device Ty	pc. I and L 14 (L	, , ,	0/ T-1-I					1		
Freed Silica	Basis Outstand	040 N					760.73	(mg) Total	Mold Compound	% ot Total Weight	79.8
Mail Hydro Oxford Figure 7 (1995) Secret 1 (Mod Compound 5.756 58.0861 67.760 Figure 7 (1995) Secret 1 (Mod Compound 5.956 5.952 5.526 5.526 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.011 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (1995) Secret 1 (Mod Compound 5.956 19.951 19.950 Figure 7 (T 10::		70.00	
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Please Rean											
Signary 14968-607 Most Compound 0.996 10.918 19.800 19.900											
Carbon Black 1333-64 Mole Compound 0.399 3.80 4 3.990 Copper 1740-50-5 Islan Famme 10.03 4 56.830 10.034 1 10.00											
Copper											
Iron 7498-96-6 Lead Frame 0,247 2,303 2,468 10.19 Important leads Frame 0,240 1,507 2,000 Corpor 7450-25-8 9.554 P. Corpor 7450-25-2 Lead Frame 0,020 1,507 2,000 Corpor 7450-25-8 9.554 P. Corpor 7450-								Calbuil black			
Siver 7440254 Lead Frame 0.013 0.125 131											
Energy Propophorus (1772-14-0) Lead Frame (17							100.10				10.5
Phosphorous 7723-14-0 Lead Farme 0.009 0.083 87 Sher 7440-22-1 Die Attach 0.569 5.82 5.825 Furchmarked Methan Resin 7340-32-1 Die Attach 0.113 1.072 1.125 Furchmarked Methan Resin 7360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 7360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 7360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 7360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.072 1.125 Furchmarked Methan Resin 17360-364 Die Attach 0.13 1.000 Die Attach 0.13											
Silver 7440-22-4 Die Attach 0.563 5.862 5.625 Die Dester Reain 94-86-9 1 Die Attach 0.038 0.357 375 Functionalized Urethrane Resin 728-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 0.003-96-5 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-5 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.357 375 Epony Resin 1,000-96-9 1 Die Attach 0.038 0.009											
Disease Resin 94-89-4 Dise Attach 0.13 1.072 1.125 Finctionalized Urbane Resin 17285-86-4 Dise Attach 0.038 0.357 1.75 Figure Resin 9005-96-5 Dise Attach 0.019 0.179 1.80 7.5 Total 100.00 Figure Resin 13061-05-5 Disease 13											
Functionalized Urbrane Resin 72898-98-4 Die Attach 0.038 0.357 375 Total 190.00 Part 190.00											
Epony Resin 9003-96-5 Die Attach 0.019 0.179 188 7,15 (mag) Total Die Attach V. of Total Weight 9.75 (Part 1996) 1.000 1								Phosphorous			
Export Resin 13861-08-5 Die Attaich											
Silcon 7440-21-3 Chip (Die) 7,500 71,488 75,000 Chip (Die) 7,500 71,488 75,000 The Color (Color (Die) 7440-57-5 With Bond 7,400-31-5 Pulling on external parameter (Die Policy (Die) 1,200 11,916 12,500 11,916 12,500 Empty (Parameter (Die Policy (Die) 1,200 11,916 12,500 Empty (Parameter (Die) 1,200 11,916 12,500 Empty (Parameter (Die) 1,200 Empty (Parameter (Die)							7.15				0.75
Gold 7440-57-5 Wire Bond 1507-161 Plange on external stage (res). Mate To I are assed at 1970 for 1 tour 1.250 11.907 2.000 TOTALS: 100.000 953.30 1,000,000 Epoxy Resin 13661-08-5 3 TOTALS: 100.000 953.30 1,000,000 Epoxy Resin 13661-08-5 3 TOTALS: 100.000 953.30 1,000,000 TOTALS: 100.000 953											
Tin 7440-31-5 Resign on external stacks (pre) - Mate Tin / averabled at 190°C for 1 hour 1 (250 1 1).916 12.500 1.095.33 G Total Mass 0.953.3 G Total Mass 0.953.3 G Total Mass Total 13561-08-5 3 Total (mg) Chip (Die) % of Total Weight 7.5 Total (mg) Chip (Die) % of Total Weight 7.5 Total (mg) Total 13561-08-5 3 Doped Silcon 7440-21-3 100.00 Total 100.00 7.150 Total (mg) Chip (Die) % of Total Weight 7.5 Total (mg) Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total (mg) Chip (Die) % of Total Weight 7.5 Total (mg) Chip (Die) % of Total Weight 7.5 Total (mg) Total 100.00 Total 100.00 Total 100.00 Total (mg) Total (mg) Total 100.00 Total 100.00 Total (mg) Total 100.00 Total 100.00 Total (mg) Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total (mg) Total Wire Bond 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total (mg) Total Wire Bond 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total (mg) Total Wire Bond 100.00 Total 100.											
O.9533 g Total Mass TOTALS: 100.000 953.300 1,000,0000 Domiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Total 100.000 Total (mg) Chip (Die) Not Total (weight 7.5 Total 100.000 Total (mg) Chip (Die) Not Total (weight 7.5 Total 100.000 Total (mg) Chip (Die) Not Total (weight 7.5 Total 100.000 Total (mg) Chip (Die) Not Total (mg) Total Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Total Wire Bond Not Total Weight O.2 Cheed Silicon Total 100.00 Total (mg) Tot							Fund				
0.9533 g Total Mass 10.00 10	Tin	7440-31-5									
micronductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive). EU Directive) 2002/95/EC (RoHS Directive). 71.50 75			TOTALS:	100.000	953.300	1,000,000		Epoxy Resin			
emiconductor device and its homogenous materials comply with EU Directive 2002/59/EC (RoHo-II-IIVe Volice) (EQU Directive). ### 2002/59/EC (End-of-II-IIVe Volice) (EQU Directive). ### 2002/59/EC (End-of-II-IVE Volice) (EQU Directive). ### 2002/59/EC (End-of-IIVE Volice). ### 2002/59/		0.9533	g Total Mass						Total	100.00	
plogy Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the acial substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer d certain "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor is in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot tee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw all suppliers. Suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assembliers and aterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information any not have been provided by subcontract assembliers and aterial suppliers. Information is provided only as estimates of the average weight of the average weight of inticipated significant toxic metals components. estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. hip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale.	iance with the above EU Directives has been verified vi	•		e and, to the b	est of Microch	in			7440-21-3	100	
Incom/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer did certain "reels" may be made from PVC plastic. In page 1	ology Incorporated's knowledge and belief as of the dat cal substance, if any, is not below the threshold of regu	te of this document, the latery concern for any	here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	le impurity cor	centration of	the					
dight certain "reels" may be made from PVC plastic. Doped Gold 7440-57-5 100			i plastics. Fou can access the OE IQ I in failing of databa	ises to obtain a	rtest report at	•	1.91	(mg) Total	Wire Bond	% of Total Weight	0.2
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ses in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot not every find the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw ial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and laterial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. The exclusive is estimated on not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited is to the varianties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration, and the provided in this declaration in the exclusive, limited is to will be added to the provided provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration in the exclusive, limited is to will be added to the provided in this declaration. The exclusive, limited is to will be added to the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, limited is to will be added to the provided by Microchip Technology Incorporated and it		ed are made from poly	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
tick particularly incorporated uses into provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total Weight 1.25 11.92 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 word of Total Weight 1.25 11.92 (mg) Total Weight 1.25 11	bio Tbl								Total	100.00	•
wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or of this Certificate of Compliance for semiconductor products.	s in their original packing materials is true and correct ttee the completeness and accuracy of data in this form al suppliers. Supplier information is often protected fro aterial suppliers. Information is provided only as estim	n because it has been om disclosure as trade ates of the average we	compiled based on the ranges provided in Material Safe e secrets and some information may not have been proving eight of these parts and the average weight of anticipate	ety Data Sheets vided by subco d significant to	provided by intract assemi exic metals co	raw blers and					
Total 400.00	is in their original packing materials is true and correct thee the completeness and accuracy of data in this form all suppliers. Supplier information is often protected froaterial suppliers. Information is provided only as estimestimates do not include trace levels of dopants, metal thip Technology Incorporated does not provide any was the warranties provided by Microchip Technology Incorporated.	n because it has been om disclosure as trade ates of the average we ls, and non-metal mat rranty, express or imp porated and its subsidi	compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro- ight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the silied, with respect to the information provided in this de	ety Data Sheets vided by subco d significant to e finished parts claration. The	s provided by intract assemil oxic metals co exclusive, lim	raw blers and mponents.	11.92	(mg) Total	leads (pins) - Matte Tin	% of Total Weight	1.25
10tal 100.00	s in their original packing materials is true and correct ttee the completeness and accuracy of data in this form al suppliers. Supplier information is often protected from the suppliers. Information is provided only as estimates do not include trace levels of dopants, metal withing Technology Incorporated does not provide any was to warranties provided by Microchip Technology Incorpochip's quotations, sales order acknowledgement, and whip disclaims any duty to notify users of updates or chise, suffered by users or third parties as a result of the	n because it has been om disclosure as trade ates of the average we ls, and non-metal mat rranty, express or imporated and its subsidi i invoices. anges to Material Con users' reliance on the	compiled based on the ranges provided in Material Safe secrets and some information may not have been proviging to f these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the solied, with respect to the information provided in this de laries are contained in Microchip's standard terms and of tent Declarations and shall not be liable for any damage.	ety Data Sheets vided by subco d significant to e finished parts claration. The conditions of s es, direct or inc	provided by intract assemble oxic metals co exclusive, limulate. These are direct, conseq	raw blers and mponents. ited provided uential or	11.92		leads (pins) - Matte Tin / annealed at 150°C for 1		1.25

P PE 16 PDIP 7:07 PM : 8/8/2012

ICROCHIP	D. DE 40 DE	ID a see		nation Base A				nogeneous Materials: (e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: Pand PE 16 (Lead) PD	IP (Small Outline300") (D6 / DU)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	748.83	(mg) Total	Mold Compound	% ot Total Weight	67.3
Silica, vitreous	60676-86-0	Mold Compound	57.205	636,503	572,050		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45,866	41,221		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45,866	41,221		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.649	18,346	16,489		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.202	2.246	2,019		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	29.426	327,409	294,256			Total	100.00	ı
Iron	7439-89-6	Lead Frame	0.724	8.054	7,238	342.70	(mg) Total	Lead Frame	% of Total Weight	30.8
Silver	7440-22-4	Lead Frame	0.587	6.528	5,867	342.70	Copper	7440-50-8	95.54	30.0
Zinc	7440-66-6	Lead Frame	0.039	0.428	385		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.039	0.428	254		Silver	7439-89-6	1.91	
Silver	7440-22-4	Die Attach	0.052	0.576	518		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.032	0.179	161		Phosphorous	7723-14-0	0.13	
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.023	21		Filospilorous			
								Total		
Silicon	7440-21-3	Chip (Die)	0.150	1.669	1,500	0.78	(mg) Total	Die Attach	% of Total Weight	0.07
Gold	7440-57-5	Wire Bond	0.040	0.445	400		Silver	7440-22-4	74	
Tin	7440-31-5 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.640	18.248	16,400		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	1,112.670	1,000,000		Gamma-butyrolactone	96-48-0	3	
	1.1127 g Tot	al Mass						Total	100.00	-
3/EC (End-of-Life Vehicles (ELV) Directive).		, , ,	S Recast Direct	tive) and with	EU Directive	1.67	Total (mg)	Chip (Die)	% of Total Weight	0.15
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via in the intermediate the chemical substance is absent from the list above, the chemical	ternal design controls, supp	lier declarations, and /or analytical test data.	to the best of I	, Microchip Tec	hnology	1.67	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	100	0.15
3/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via in Iliance with the above EU Directives has been verified via in Iliance with the above EU Directives has been verified via in Iliance with the chemica Iliance with the	ternal design controls, supp al substance is NOT an inten ant, there is no credible reas ry scheme world-wide. ability standard for plastics.	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer	to the best of l	Microchip Tec	hnology	0.45	1	7440-21-3	100	0.15
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via in the semical substance is absent from the list above, the chemical solution of the date of this docume below the threshold of regulatory concern for any regulator ng compounds used by Microchip meet the UL94 V0 flamma'ul.com/global/eng/pages/offerings/industries/chemicals/plarotective "tubes" in which the specific product is shipped and the semigraphy of the specific product is shipped and the semigraphy of the semigraphy o	ternal design controls, supp al substance is NOT an inten ent, there is no credible reas ry scheme world-wide. ability standard for plastics. stics/	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen You can access the UL iQTM family of databases to	to the best of I tration of the c	Microchip Tec chemical subst	nnology ance, if any,		Doped Silicon	7440-21-3 Total	100	
semiconductor device and its homogenous materials complicated (ELV) Directive). Diance with the above EU Directives has been verified via in the medical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume to below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flamma (full.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped as in "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information in the original packing materials is true and correct to the best of its place.	ternal design controls, supp al substance is NOT an inten ent, there is no credible rease y scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo nis form concerning substan	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent of the control of	to the best of I tration of the c o obtain a test old the packing	Microchip Tec chemical subsi report at slip on the ou semiconductor	nnology ance, if any, ter box and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume t below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic.	ternal design controls, supp al substance is NOT an inten- ent, there is no credible reas- ry scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo- nis form concerning substan is knowledge and belief, as c en compiled based on the ra id some information may no nd the average weight of ant	tier declarations, and /or analytical test data. Itional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concert you can access the UL iQTM family of databases tride (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technologinges provided in Material Safety Data Sheets prov thave been provided by subcontract assemblers a cicipated significant toxic metals components. The	to the best of I tration of the co o obtain a test old the packing ncorporated's s ly Incorporated ind raw materia draw materia	Microchip Tecchemical substance at slip on the outside a semiconductor a cannot guara tetrial suppliers. In suppliers.	ter box and devices in the the s. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume t below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped as in "reels" may be made from PVC plastic. pochip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ded only as estimates of the average weight of these parts at	ternal design controls, supp al substance is NOT an inten- ent, there is no credible reas- ry scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo- nis form concerning substan- ts knowledge and belief, as c en compiled based on the ra- d some information may no not the average weight of ant con devices (silicon IC) in the ty, express or implied, with r	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concern. You can access the UL iQTM family of databases to tride (PVC) plastic. "Window envelopes" used to he can be called the case restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology is grovided in Material Safety Data Sheets provide thave been provided by subcontract assemblers a cicipated significant toxic metals components. These is finished parts.	to the best of latration of the coordinates of the packing incorporated ided by raw mains are estimates do coordinates do coor	Microchip Tecchemical substance and supplies a supplies and supplies in ont include to sive, limited prime sive, limited prime substance and supplies.	ter box and devices in the the s. Supplier formation is race levels		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100 100.00	
53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in the memical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume to below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flamma (vul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped as in "reels" may be made from PVC plastic. pochip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts and pants, metals, and non-metal materials contained within silicochip Technology Incorporated does not provide any warram inties provided by Microchip Technology Incorporated and it	ternal design controls, supp al substance is NOT an inten- ent, there is no credible reas- ry scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo- nis form concerning substan- ts knowledge and belief, as cen- en compiled based on the ra- d some information may no and the average weight of ant con devices (silicon IC) in the ty, express or implied, with ra- ts subsidiaries are contained	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concert. You can access the UL iQTM family of databases the order of the concert of t	to the best of I tration of the cooperated's syllncorporated's syllncorporatedided by raw mand raw materiase estimates do ion. The exclusion. These are	Microchip Techemical substance and substance and suppliers and suppliers. In on ont include to provided in M., consequential suppliers, and suppliers.	ter box and devices in the the s. Supplier formation is race levels duct icrochip's	0.45	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	0.04
Si/EC (End-of-Life Vehicles (ELV) Directive). Isliance with the above EU Directives has been verified via in the semical substance is absent from the list above, the chemical corated's knowledge and belief as of the date of this docume below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flamma (ul.com/global/eng/pages/offerings/industries/chemicals/pla rotective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic. Chip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it leteness and accuracy of data in this form because it has be nation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts and be another in the second in the second in the second in the form of the provide any warran in the provided by Microchip Technology Incorporated and it tions, sales order acknowledgement, and invoices. Chip disclaims any duty to notify users of updates or change wise, suffered by users or third parties as a result of the user.	ternal design controls, supp al substance is NOT an inten- ent, there is no credible reas- ry scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo- nis form concerning substan- ts knowledge and belief, as cen- en compiled based on the ra- d some information may no and the average weight of ant con devices (silicon IC) in the ty, express or implied, with ra- ts subsidiaries are contained	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concert. You can access the UL iQTM family of databases the order of the concert of t	to the best of I tration of the cooperated's syllncorporated's syllncorporatedided by raw mand raw materiase estimates do ion. The exclusion. These are	Microchip Techemical substance and substance and suppliers and suppliers. In on ont include to provided in M., consequential suppliers, and suppliers.	ter box and devices in the the s. Supplier formation is race levels duct icrochip's	0.45	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.04

P 16 PDIP 7:07 PM : 8/8/2012

MICROCHIP Semiconductor Device	e Type: P 18 (Lead) PC	NIP .300" (F3 / FP)		nation Base A pper Alloy (C	•		•	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	10 (2000) 12	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	995.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	109.549	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	69.713	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin SiO2	Trade Secret 14808-60-7	Mold Compound Mold Compound	5.586 1.995	69.713 24.898	55,860 19,950		Phenol Resin SiO2	Trade Secret 14808-60-7	7.00 2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	4.980	3.990		Carbon Black	1333-86-4	0.50	
Carbon Black	7440-50-8	Lead Frame	10.031	125.192	100.314		Carbon Black	1333-86-4 Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	3.079	2.468	131.04	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	2.496	2,400	131.04	Copper	7440-50-8	95.54	10.5
Zinc	7440-66-6	Lead Frame	0.200	0.164	131		Iron	7440-50-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.013	0.104	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.554	6.908	5,535		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.141	1.760	1,410		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.047	0.590	473			Total	100.00	Ц
Phenolic hardener	92-88-6	Die Attach	0.002	0.028	23	9.36	(mg) Total	Die Attach	% of Total Weight	0.75
Distribution of the contract of	440.07.0	Di- Aut-	0.000	0.075	60					
Butyl cellosolve acetate Silicon	112-07-2 7440-21-3	Die Attach	0.006 7.500	0.075 93.600	75,000		Silver Epoxy Resin	7440-22-4 9003-36-5	74 19	
Gold	7440-21-3	Chip (Die) Wire Bond	0.200	2.496	2.000		Butyl phenyl glycidyl ether	3101-60-8	6	
Tin		ing on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	15.600	12,500		Phenolic hardener	92-88-6	0	
1111	7440-31-3 Plat	TOTALS:	100.000	1,248.000	1.000.000		Butyl cellosolve acetate	112-07-2	1	
	1.2480 g T			.,2 .0.000	.,000,000		Daty: concours acctato	Total	100.00	1
				Directive) and	1 with FII					
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi		02/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data.	(KOHS Recast	Directive) and	d with EU	93.60	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
	ied via internal design controls, e chemical substance is NOT ar ne date of this document, there	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devices is no credible reason to believe that the unavoidable.	e and, to the b	est of Microch	ıip	93.60	1			7.5
Compliance with the above EU Directives has been verifit f a chemical substance is absent from the list above, the echnology Incorporated's knowledge and belief as of the	ded via internal design controls, e chemical substance is NOT at the date of this document, there is regulatory concern for any regulatory concern for any regulatory standard for pla	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.	e and, to the b	est of Microch	ip the	2.50	1	7440-21-3	100	0.2
Compliance with the above EU Directives has been verifif f a chemical substance is absent from the list above, the rechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of folding compounds used by Microchip meet the UL94 V	ed via internal design controls, e chemical substance is NOT at the date of this document, there is regulatory concern for any reg (0 flammability standard for planicals/plastics/	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidablulatory scheme world-wide. stics. You can access the UL iQTM family of databa	e and, to the b le impurity cou	est of Microch ncentration of a test report a	nip the		Doped Silicon	7440-21-3 Total	100	
Compliance with the above EU Directives has been verifif a chemical substance is absent from the list above, the fechnology Incorporated's knowledge and belief as of the themical substance, if any, is not below the threshold of folding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem the protective "tubes" in which the specific product is significant to the specific product is significant to the specific product of the specific product is significant to the specific product of the specific product is significant to the specific product is signif	ied via internal design controls, e chemical substance is NOT at the date of this document, there i regulatory concern for any reg (0 flammability standard for planicals/plastics/ hipped are made from polyviny attion in this form concerning surrect to the best of its knowledge i form because it has been com def from disclosure as trade sec sestimates of the average weight	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide. Stics. You can access the UL iQTM family of databated chloride (PVC) plastic. "Window envelopes" used abstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Saferets and some information may not have been provof these parts and the average weight of anticipate	e and, to the ble impurity consess to obtain a to hold the particle of the par	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpore s provided by ntract assem partract assem	t the outer ductor ited cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
compliance with the above EU Directives has been verifif a chemical substance is absent from the list above, the fechnology incorporated's knowledge and belief as of the themical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 V futti://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is sinox and certain "reels" may be made from PVC plastic. If it is a provided in their original packing materials is true and conjuarantee the completeness and accuracy of data in this naterial suppliers. Supplier information is often protecte aw material suppliers. Information is provided only as e	ied via internal design controls, et chemical substance is NOT at the date of this document, there is regulatory concern for any reg (0 flammability standard for planicals/plastics/ chipped are made from polyviny attion in this form concerning starrect to the best of its knowledges from disclosure as trade see estimates of the average weight metals, and non-metal material; y warranty, express or implied, noorporated and its subsidiaries	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide. Stics. You can access the UL iQTM family of databated chloride (PVC) plastic. "Window envelopes" used abstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safe rets and some information may not have been provof these parts and the average weight of anticipates contained within silicon devices (silicon IC) in the with respect to the information provided in this de-	e and, to the ble impurity consess to obtain a to hold the party conjugation of the party control of the party con	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpore s provided by nutract assem oxic metals cos.	t t the outer ductor ted cannot raw blers and imponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
Compliance with the above EU Directives has been verifif a chemical substance is absent from the list above, the fechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is sioox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information is often protective in their original packing materials is true and collustrantee the completeness and accuracy of data in this naterial suppliers. Information is often protective aw material suppliers. Information is provided only as each these estimates do not include trace levels of dopants, reflicrochip Technology Incorporated does not provide any product warranties provided by Microchip Technology In	ied via internal design controls, as chemical substance is NOT at the date of this document, there is regulatory concern for any reg (0 flammability standard for planicals/plastics/), thipped are made from polyviny attion in this form concerning surrect to the best of its knowledge form because it has been comed from disclosure as trade see statimates of the average weight metals, and non-metal material by warranty, express or implied, corporated and its subsidiaries to, and invoices.	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide. Stics. You can access the UL iQTM family of databate of chloride (PVC) plastic. "Window envelopes" used abstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safe rets and some information may not have been proof these parts and the average weight of anticipates contained within silicon devices (silicon IC) in the with respect to the information provided in this desire contained in Microchip's standard terms and of Declarations and shall not be liable for any damage.	e and, to the ble impurity col- ses to obtain a to hold the pa ogy Incorpora ochip Technol ty Data Sheets dided by subcd d significant to finished parts claration. The conditions of s es, direct or in-	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by notract assem poxic metals co s. exclusive, lim sale. These are	t the outer ductor sted cannot raw bilers and omponents.	2.50	Doped Silicon (mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 100.00 % of Total Weight 100 100.00	0.2
a chemical substance is absent from the list above, the echnology Incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of folding compounds used by Microchip meet the UL94 V ttp://ul.com/global/eng/pages/offerings/industries/che he protective "tubes" in which the specific product is si ox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informate evices in their original packing materials is true and coluarantee the completeness and accuracy of data in this naterial suppliers. Supplier information is often protect aw material suppliers. Information is provided only as eithese estimates do not include trace levels of dopants, in Microchip Technology Incorporated does not provide amonduct warranties provided by Microchip Technology Incorporated does not provide amonductor and incorporations, sales order acknowledgement incrochip disclaims any duty to notify users of updates of therwise, suffered by users or third parties as a result of	ied via internal design controls, as chemical substance is NOT at the date of this document, there is regulatory concern for any reg (0 flammability standard for planicals/plastics/), thipped are made from polyviny attion in this form concerning surrect to the best of its knowledge form because it has been comed from disclosure as trade see statimates of the average weight metals, and non-metal material by warranty, express or implied, corporated and its subsidiaries to, and invoices.	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide. Stics. You can access the UL iQTM family of databate of chloride (PVC) plastic. "Window envelopes" used abstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safe rets and some information may not have been proof these parts and the average weight of anticipates contained within silicon devices (silicon IC) in the with respect to the information provided in this desire contained in Microchip's standard terms and of Declarations and shall not be liable for any damage.	e and, to the ble impurity col- ses to obtain a to hold the pa ogy Incorpora ochip Technol ty Data Sheets dided by subcd d significant to finished parts claration. The conditions of s es, direct or in-	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by notract assem poxic metals co s. exclusive, lim sale. These are	t the outer ductor sted cannot raw bilers and omponents.	2.50	Doped Silicon (mg) Total Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.2

P 18 PDIP 7:07 PM : 8/8/2012

ICROCHIP Semiconductor Device Type	· PG 24 (1 and) PF	NP Wide Outline SOOT (1117)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	. FG 24 (Lead) FL	"Contained In"	% Total	1	1			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1267.01	(mg) Total	Mold Compound	% ot Total Weight	68.46
Silica, vitreous	60676-86-0	Mold Compound	58.191	1076.958	581,910		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.677	31.042	16,773		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.205	3.801	2,054		Carbon Black	1333-86-4	0.30]
Copper	7440-50-8	Lead Frame	27.830	515.060	278,301			Total	100.00	
Iron	7439-89-6	Lead Frame	0.685	12.669	6,846	539.12	(mg) Total	Lead Frame	% of Total Weight	29.13
Silver Zinc	7440-22-4 7440-66-6	Lead Frame	0.555	10.270 0.674	5,549		Copper	7440-50-8	95.54	
Zinc Phosphorous	7723-14-0	Lead Frame Lead Frame	0.036 0.024	0.674	364 240		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Silver	7440-22-4	Die Attach	0.024	1.917	1.036		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322		Phosphorous	7723-14-0	0.08	
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.078	42	ļ ļ	Filospilolous	Total	100.00	<u>I</u>
Silicon	7440-21-3	Chip (Die)	0.750	13.880	7,500	2.59	(mg) Total	Die Attach	% of Total Weight	0.14
Gold	7440-57-5	Wire Bond	0.030	0.555	300	2.59	Silver	7440-22-4	74	0.14
Tin		ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490	27.576	14.900		Epoxy resin	Trade Secret	23	
1111	7440-31-3 Fiz	TOTALS:	100.000	1.850.730	1.000.000		Gamma-butyrolactone	96-48-0	3	
	4 0507	Total Mass	100.000	1,000.100	1,000,000		Carrina batyrolactoric	Total	100.00	1
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).							Total (ma)	Chin (Dia)	9/ of Total Weight	0.75
pliance with the above EU Directives has been verified via in	•		4 - 4 - 5	6 M illon		13.88	Total (mg) Doped Silicon	7440-21-3	% of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o iical substance, if any, is not below the threshold of regulate	cal substance is NOT a f this document, there ory concern for any re	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.	le impurity cor	ncentration of	the	13.88	1			
pliance with the above EU Directives has been verified via ir hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o	al substance is NOT a f this document, there ory concern for any re ability standard for pla	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.	le impurity cor	ncentration of	the	0.56	1	7440-21-3	100	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o cical substance, if any, is not below the threshold of regulate ing compounds used by Microchip meet the UL94 V0 flamm	al substance is NOT a f this document, there ory concern for any re ability standard for pla astics/	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. astics. You can access the UL iQTM family of databa	le impurity con	ncentration of a test report a	the t		Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o ical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pliprotective "tubes" in which the specific product is shipped a	al substance is NOT at f this document, there by concern for any re ability standard for plastics/ are made from polyvin this form concerning since best of its knowled cause it has been condisclosure as trade se to of the average weigh	n intentional ingredient in the semiconductor devicis no credible reason to believe that the unavoidable gulatory scheme world-wide. stics. You can access the UL iQTM family of databatyl chloride (PVC) plastic. "Window envelopes" used ubstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Saferets and some information may not have been provide of these parts and the average weight of anticipate	le impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to	a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	t the outer adductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date or ical substance, if any, is not below the threshold of regulate ing compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pliorotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The proposed in the recompleteness and accuracy of data in this form be rial suppliers. Information is often protected from naterial suppliers. Information is provided only as estimater	al substance is NOT at fithis document, there ory concern for any re ability standard for plastics/ are made from polyvin this form concerning sithe best of its knowled ecause it has been condisclosure as trade se so of the average weigh and non-metal materia try, express or implied ted and its subsidiarie ted and its subsidiarie	n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. stics. You can access the UL iQTM family of databatyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safecrets and some information may not have been prot of these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the with respect to the information provided in this de	to hold the pa ogy Incorporat ochip Technol ty Data Sheet vided by subco d significant to finished parts claration. The	a test report a a test report a a test report a a teking slip on ted's semicon ogy Incorpora s provided by portract assemboxic metals cos.	the t the outer inductor ated cannot raw blers and omponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.03
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemical of the composition of the date of the	al substance is NOT at finis document, there by concern for any re ability standard for plassics/ are made from polyvin this form concerning such a best of its knowled cause it has been condisclosure as trade se of the average weigh and non-metal material ty, express or implied ted and its subsidiarie voices.	n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. astics. You can access the UL iQTM family of databatyl chloride (PVC) plastic. "Window envelopes" used ubstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safecrets and some information may not have been provided to the too these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the within service with the same contained in Microchip's standard terms and of Declarations and shall not be liable for any damage.	le impurity con sess to obtain a to hold the pa ogy Incorporat ochip Technol ety Data Sheets vided by subcot d significant to finished parts claration. The conditions of s	a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim aale. These ard	the tt the outer adductor raw blers and omponents.	0.56	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.03

PG 24 PDIP 7:07 PM : 8/8/2012

Basic Substance CAS Number Sub-Component Weight mgjnart ppm Fused Silics 6,0577-65-05 Mode Component 49,722 72,2,633 497,507 Model Through Service And Component 19,700 Model Compound 49,722 72,2,633 497,507 Model Through Service Model Through Service Model Compound 49,722 72,2,633 497,507 Model Through Service Model Compound 49,722 72,2,633 497,507 Model Compound 19,700 M	ICROCHIP Semiconductor Device	Type: P 20 (Lead) F	PDIP .300" (G6/GV)		nation Base /	•		•	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Lassi Substantiance CAS Number Substantiance CAS Number Substantiance		== (====,=		% Total							
Metal India Chode Trads Secret Mode Corrorand 4,507 114,898 76,010 120	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1045.39	(mg) Total	Mold Compound	% ot Total Weight	69.1
Epoc Resin	Fused Silica	60676-86-0	Mold Compound	49.752	752.683	497,520		Fused Silica	60676-86-0	72.00	
Phenor Repair Trade Secret	Metal Hydro Oxide	Trade Secret	Mold Compound	7.601	114.993	76,010		Metal Hydro Oxide	Trade Secret	11.00	
SO2 1409-90-7 Mode Compound 1,728 26,135 17,276 Cathon Black 1333-964 Mode Compound 1,728 26,135 17,276 Cathon Black 1333-964 Mode Compound 1,728 26,135 17,276 Cathon Black 1333-964 Mode Compound 1,728 26,135 17,276 Cathon Black 1,728 Mode Compound 1,728 Mode	Epoxy Resin	Trade Secret	Mold Compound	4.837	73.178	48,370		Epoxy Resin	Trade Secret	7.00	
Carbon Black	Phenol Resin	Trade Secret	Mold Compound	4.837	73.178	48,370		Phenol Resin	Trade Secret	7.00	
Copper	SiO2	14808-60-7						SiO2		2.50	
Tri Tyta 99-96 Least Frame 0.681 10.303 6.810 438-43 tonol Total Least Frame No Floats Weight 28-95	Carbon Black	1333-86-4	Mold Compound	0.346	5.227	3,455		Carbon Black	1333-86-4	0.50	
Silver 7440-224 Lead Frame 0.056 0.582 8.392 5.551 ton 7440-266 Lead Frame 0.056 0.588 8.392 Expression 7440-266 1.204 Example 1.204 0.382 1.205 Expression 1.205 0.058 Exp	Copper	7440-50-8	Lead Frame	27.687	418.865	276,868		•	Total	100.00	
Sherr 7440;224 Lead Frame 0,056 0,582 8,382 5,531 Copper 740;00-0 9 95,54 Propiporous 772;14:0 Lead Frame 0,006 0,548 362 End 1,000	Iron	7439-89-6	Lead Frame	0.681	10.303	6.810	438.43	(mg) Total	Lead Frame	% of Total Weight	28.98
Enclose Procephorous 1725-140 Lead Frame 0.036 0.548 382 SP Procephorous 1725-140 Lead Frame 0.036 0.058 1.021 19 SP Procephorous 1725-140 Lead Frame 0.036 0.058 1.021 19 SP Procephorous 1725-140 Lead Frame 0.036 0.058 1.021 19 SP Procephorous 1725-140 1	Silver	7440-22-4	Lead Frame	0.552	8.352	5.521					
Prosphorous 7723-140 Lead Frame 0.024 0.362 239				0.036							
Silver (Ag) 1440-224 Die Attach 0.088 1021 675 Modified Eprox Resin 13561-086 Die Attach 0.013 0.191 126 Dighycdyletter of bisphenol-F 05428-63-8 Die Attach 0.007 0.0102 68 Modified Amin 1627-43-0 Die Attach 0.007 0.0102 68 Modified Amin 1627-43-0 Die Attach 0.007 0.0102 68 Modified Amin 1627-43-1 Die Attach 0.007 0.0102 68 Modified Amin 1627-43-1 Die Attach 0.007 0.0102 0.0103 0.0148 33 1.00 Modified Amin 1627-43-1 Die Attach 0.007 0.007 0.0102 0.0103 0.0148 33 1.00 Modified Amin 17440-31-3 Die Attach 0.007 0.007 0.0102 0.0103 0.0148 0.000 0.007 0.0102 0.0103 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.0148 0.000 0.000 0.000 0.0148 0.000 0.0											
Modified Epoy Resin 1361-09-5 Die Attach 0.013 0.191 126 Digylophenor 54008-58 Die Attach 0.007 0.102 68 Total 10.00 Modified Amine 827-43-0 Die Attach 0.003 0.048 32 1.96 mgl) Total Die Attach 0.007 Attach 0.007 0.02 68 Mgl) Total Die Attach 0.007 0.008 0.048 32 1.96 mgl) Total Die Attach 0.007 0.008 0.048 0.009 0			Die Attach	0.068							
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Modified Armine 827-43-0 Die Attach 0.003 0.048 32 136 (mg) Total Weight 0.99 (Sillectin 7440-21-3 Chip (Die) 0.3030 4.538 3.000 (Mice Dond 7440-57-5 Painty on ownered least light 1.500 (Mice Dond 7440-57-5 Painty on ownered least light 1.500 (Mice Dond 1.512.870 1.000.000 1.512.870 1.											1
Silcon 7440-21-3 Chip (Die) 0.300 4.539 3.000 Modified Epony Resin 15661-09-5 14 15 100 2.000 1,512.870 1,000,000 1,512.870 1,							1 26	(mg) Total			0.00
Gold 7440-97-5 Wire Bond 0.020 0.303 200 Modified Epony Resin 15851-89-5 14 Dipylogenetral table gines). Mate Tri / anemaled at 1907 for 1 hour 1.512 9 Total Mass 1.5129 g Total Mass 1.5129							1.30				0.03
Tin 7440-31-5 Pating necessarial language registers and section of the completeness and accuracy of data in this form because it has been completeness and accuracy of data in this form because it has been completeness and accuracy of data in this form because it has been completeness and accuracy of data in this form because it has been completeness and accuracy of data in this form because it has been completeness and accuracy of data in this form because it has been completed bead on the ranges provided in Material Steplers. Information is provided only as estimates of ont include trace levels of donotyn proported and list subpliers. Supplier of the completeness and accuracy of data in this form because it has been completed based on the ranges provided in Microchip's standard to reprovided in Microchip's standard do not include trace levels of only as estimates of the average weight of these parts and the average weight of these parts and the average weight of these parts and the average weight of anticipated significant toxic metals components. Total (mg) Total (mg) Doped Silson (7440-21-3 100.00 (mg) Total (mg											
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1.5129 g Total Mass 1.5129 g	IIII	7440-31-5					-				
International conductor device and its homogenous materials comply with EU Directive 2002/85/EC (RoHs Directive), EU Directive) and with EU ve 2002/85/EC (RoH-of-Life Vehicles (ELV) Directive). International control of the control				100.000	1,312.070	1,000,000		Woulded Allille	027-43-0		J
soliday incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the call substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at II. com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer d certain "reels" may be made from PVC plastic. Total Doped Gold 7440-57-5 100 Doped Gold 7440-57-5 100 Total Doped Gold 7440-57-5 100 Total Doped Gold 7440-57-5 100 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 flour of this document, and invoices. In plate of the certain suppliers in formation is provided by subsconting are reported and its subsidiaries are contained in Microchip's standard terms and contictions of sale. These are provided by Microchip Technology Incorporated Significant toxic metals components. estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. In plate of the complete of the compl		s comply with EU Directiv	•	(RoHS Recast	t Directive) an	d with EU	4.54	Total (mg)			0.3
un.com/global/eng/pages/offerings/industries/chemicals/plastics/ rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold T/440-57-5 100	ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directiv).	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	t Directive) an	d with EU	4.54	, ,,	Chip (Die)	% of Total Weight	0.3
Total 100.00 To	ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive iliance with the above EU Directives has been verific emical substance is absent from the list above, the lology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of	s comply with EU Directiv). d via internal design con- chemical substance is No e date of this document, t regulatory concern for an	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidaby regulatory scheme world-wide.	e and, to the b le impurity co	est of Microcl	nip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor set in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot set in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and aterial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. The exclusive in the finished parts. The provided parts of the completeness and accuracy of data in this form because it has been complied based on the ranges provided by subcontract assemblers and aterial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. The exclusive is in the finished parts. The provided parts of the average weight of anticipated significant toxic metals components. The exclusive, limited control that the finished parts. The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited control that the exclusive, limited are provided by Microchip Technology Incorporated data suppliers. The exclusive, limited are provided by Microchip Technology Incorporated data suppliers. The provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsi	ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifie emical substance is absent from the list above, the lology Incorporated's knowledge and belief as of the cal substance, if any, is not below the threshold of ng compounds used by Microchip meet the UL94 Voul.com/global/eng/pages/offerings/industries/chemi	s comply with EU Directival. Indivia internal design concended in the design concended in the design concent for an inflammability standard focals/plastics/	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. The plastics of the plastics of the plastics of databater is no credible and continuous the plastics. You can access the UL iQTM family of databater is 200.	e and, to the b le impurity co	est of Microcl ncentration of a test report a	nip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
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wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 To of this Certificate of Compliance for semiconductor products.	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive blance with the above EU Directives has been verified the microstrate of the properties of the cology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of nig compounds used by Microchip meet the UL94 VC (ul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is shind certain "reels" may be made from PVC plastic. The properties of the properties of the informate in their original packing materials is true and contest the completeness and accuracy of data in this itals suppliers. Information is often protected laterial suppliers. Information is provided only as established.	s comply with EU Directive). If via internal design concended is the edate of this document, the edate of this document, the edate of this document, the edate of this document for an edate of the edate of this document for an edate of the	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidab y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databatyvinyl chloride (PVC) plastic. "Window envelopes" used use supplied based on the ranges provided in this form. Micr compiled based on the ranges provided in Material Safe escerets and some information may not have been proveled to fetties parts and the average weight of anticipate	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorpora ochip Technol sty Data Sheets vided by subco d significant to	nest of Microcl ncentration of a test report a acking slip on ted's semicor logy Incorpors s provided by ontract assem oxic metals cc	nip the t t the outer aductor ated cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
Total 100 00	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive blance with the above EU Directives has been verified the microstrate of the properties of the propert	s comply with EU Directiv. In divia internal design conchemical substance is Not date of this document, the regulatory concern for cals/plastics/ ipped are made from polition in this form concerning to the best of its known form because it has been difform disclosure as traditional stimates of the average we letals, and non-metal mat warranty, express or impropriated and its subsidiant invoices.	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databay yrinyl chloride (PVC) plastic. "Window envelopes" used may substances restricted by RoHS in Microchip Technol whedge and belief, as of the date listed in this form. Microchip date as escrets and some information may not have been prosight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the solied, with respect to the information provided in this delaries are contained in Microchip's standard terms and the laries are contained in Microchip's standard terms and the laries are contained in Microchip's standard terms and the standard terms are standard terms and the standard terms and the standard terms are standard terms and the standard terms are standard t	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorpora ochip Technol sty Data Sheet vided by subcc d significant to finished part claration. The	nest of Microcl ncentration of a test report a acking slip on ted's semicor logy incorpor- s provided by ontract assem oxic metals cos. exclusive, linesale. These ar	t the outer ductor ated cannot raw blers and pmponents.	0.30	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.02
	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive blance with the above EU Directives has been verified the microstrate of the colory incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of the colory incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of the colory incorporated by Microchip meet the UL94 VC (ul.com/global/eng/pages/offerings/industries/chemirotective "tubes" in which the specific product is should be certain "reels" may be made from PVC plastic. The certain "reels" may be made from PVC plastic. The certain "reels" may be made from PVC plastic. The certain suppliers. Supplier information is often protected atterial suppliers. Information is provided only as east estimates do not include trace levels of dopants, muchip Technology Incorporated does not provide any act warranties provided by Microchip Technology Incorporated acknowledgement, chip disclaims any duty to notify users of updates ow wise, suffered by users or third parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of the parties as a result of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of well and the color of the parties as a result of the parties as a resu	s comply with EU Directive. In divia internal design concended in the date of this document, the date of	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databary in the control of the con	e and, to the b le impurity col uses to obtain a to hold the pa oogy Incorpora oochip Technol oty Data Sheet vided by subcd d significant to e finished part claration. The conditions of s es, direct or in	nest of Microcl ncentration of a test report a acking slip on ted's semicor logy Incorpor, s provided by ontract assem oxic metals co s. exclusive, lin sale. These ar	t the outer adductor ated cannot raw blers and omponents.	0.30	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.02

P 20 PDIP 7:08 PM : 8/8/2012

Compliant to IEC 61249-2-21:2003

MICROCHIP Semiconductor Device To	vno: P Pl 29 v Pl	DIP (Wide Outline -600") (Q2 / QB)		nation Base pper Alloy (•			geneous Materials: g. pc boards, displays))	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device 1	/pe. Fand FI 20 (Lead) FI	"Contained In"	% Total	1	ı			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	3245.23	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	2336.563	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	356.975	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	227.166	55,860	1	Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	227.166	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	81.131	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	16.226	3,990		Carbon Black	1333-86-4	0.50	
Copper Iron	7440-50-8 7439-89-6	Lead Frame Lead Frame	9.984 0.246	406.006 9.987	99,837 2,456	424.97	() T-4-I	Total	100.00	
Silver	7440-22-4	Lead Frame	0.246	8.096	1,991	424.97	(mg) Total Copper	Lead Frame 7440-50-8	% of Total Weight 95.54	10.45
Zinc	7440-22-4	Lead Frame	0.199	0.531	131	ł	lron	7440-50-8 7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.351	86	i	Silver	7440-22-4	1.91	
Polyimide	25038-81-7	Lead Frame	0.022	0.874	215		Zinc	7440-66-6	0.13	
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	0.773	190	1	Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame	0.004	0.142	35	ĺ		Total	100.00	•
Bismaleimide	79922-55-7	Lead Frame	0.003	0.122	30	2.03	(mg) Total	Lead Lock Tape	% of Total Weight	
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.122	30		Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	22.375	5,502	1	Poly - ethylene - terephthalate	25038-59-9	38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100	1	NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	2.236	550	1	Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.894	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.448	110			Total	100.00	
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18	30.50	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75.000		Silver	7440-22-4	73	
Gold	7440-57-5	Wire Bond	0.200	8.133	2,000	i	Epoxy Resin	9003-36-5	15	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	50.834	12.500	i	Diluent	3101-60-8	7	
		TOTALS:	100.000	4,066.700	1,000,000		Phenolic hardener	Trade secret	3	
	4.0667		100.000	4,066.700	1,000,000		Phenolic hardener Amine type hardener	Trade secret	3	
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	omply with EU Directive 2002/s ia internal design controls, su emical substance is NOT an in tte of this document, there is r	g Total Mass 95/EC (RoHS Directive), EU Directive 2011/65/EU (I pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable	RoHS Recast	Directive) an	nd with EU	305.00	Amine type hardener	Trade secret 827-43-0 461-58-5	1	7.5
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified won the list above, the chechnology Incorporated's knowledge and belief as of the data.	omply with EU Directive 2002/s ia internal design controls, su mical substance is NOT an in tte of this document, there is r ulatory concern for any regula mmability standard for plastic	g Total Mass 95/EC (RoHS Directive), EU Directive 2011/65/EU (I pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable tory scheme world-wide.	RoHS Recast and, to the b impurity cor	Directive) and the second of Microconcentration of Microconcentration of the second of	nd with EU	305.00	Amine type hardener Dicyandiamide	Trade secret 827-43-0 461-58-5 Total	1 0 100.00	7.5
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified want to the chical substance is absent from the list above, the chical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 VO flat.	omply with EU Directive 2002/s ia internal design controls, su emical substance is NOT an in the of this document, there is r ulatory concern for any regula mmability standard for plastic s/plastics/	g Total Mass 95/EC (RoHS Directive), EU Directive 2011/65/EU (I pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable tory scheme world-wide. ss. You can access the UL iQTM family of databas	and, to the beimpurity cor	Directive) and est of Microconcentration of a test report	nd with EU	305.00	Amine type hardener Dicyandiamide Total (mg)	Trade secret 827-43-0 461-58-5 Total Chip (Die)	0 100.00 % of Total Weight	
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rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified to the chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the di emical substance, if any, is not below the threshold of reg liding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp x and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information vices in their original packing materials is true and correc- unot guarantee the completeness and accuracy of data in v material suppliers. Supplier information is often protect d raw material suppliers. Supplier information is often protect of a raw material suppliers. Information is provided only as a mponents. These estimates do not include trace levels of crochip Technology Incorporated does not provide any we adduct warranties provided by Microchip Technology Incorp microchip's quotations, sales order acknowledgement, an crochip disclaims any duty to notify users of updates or claim termise, suffered by users or third parties as a result of the memory of the provide and the prochability of the provides and the prochability of the memory of the provided by the provided and the prochability of the provided only as a proportion of the provided by the provided only as a provided by the pr	comply with EU Directive 2002/s ia internal design controls, su mical substance is NOT an in the of this document, there is r ulatory concern for any regula mmability standard for plastic s/plastics/ ted are made from polyvinyl cl in this form concerning subsit to the best of its knowledge a this form because it has been ad from disclosure as trade se sestimates of the average weigh dopants, metals, and non-met corranty, express or implied, wit porated and its subsidiaries ar d invoices. The subsers' reliance on the inform	g Total Mass 95/EC (RoHS Directive), EU Directive 2011/65/EU (I pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable tory scheme world-wide. Is. You can access the UL iQTM family of databas inloride (PVC) plastic. "Window envelopes" used to tances restricted by RoHS in Microchip Technologiend belief, as of the date listed in this form. Microcompiled based on the ranges provided in Materia crets and some information may not have been put of these parts and the average weight of anticipal materials contained within silicon devices (silicath respect to the information provided in this decide contained in Microchip's standard terms and collarations and shall not be liable for any damages	and, to the best impurity cor- es to obtain a so hold the pa gy Incorporat chip Technol al Safety Data crovided by stated signification IC) in the laration. The conditions of s s, direct or in-	est of Microconcentration of a test report locking slip of the discount of the	chip of the at in the outer onductor rated vided by ssemblers als its. mited re provided equential or		Amine type hardener Dicyandiamide Total (mg) Doped Silicon (mg) Total	Trade secret 827-43-0 461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1 0 100.00 % of Total Weight 100 100.00 % of Total Weight 100	0.2
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Semiconductor Device Type: PHE 32 (Lead) PDIP (Wide Outline600") (P2) Basic Substance CAS Number Sub-Component		D		ination Base opper Alloy (•		s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
		"Contained In"	% Total	1 .		4478.48	(mg) Total	Mold Compound	% ot Total Weight	
			Weight	mg/part	ppm	447.0.40	,	, , , , , , , , , , , , , , , , , , , ,		1
Silica, vitreous	60676-86-0	Mold Compound	72.820	3806.712	728,195		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.247	274.307	52,473		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	6.13 6.13	
Phenolic Resin Epoxy, Cresol Novolac	Trade Secret 29690-82-2	Mold Compound Mold Compound	5.247 2.099	274.307 109.723	52,473 20.989		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.257	13,435	20,989		Carbon Black	1333-86-4	0.30	
	7440-50-8	Lead Frame	12.783	668,240	127.829		Carbon Black	1333-66-4 Total	100.00	<u>l</u>
Copper										
Iron	7439-89-6	Lead Frame	0.314	16.437	3,144	699.45	(mg) Total	Lead Frame	% of Total Weight	13.38
Silver	7440-22-4	Lead Frame	0.255	13.325	2,549		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.017	0.874	167		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.011	0.577	110		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.128	6.691	1,280		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.027	1.422	272		Phosphorous	7723-14-0	0.08	
Copper (Cu)	7440-50-8	Die Attach	0.005	0.251	48			Total	100.00	
Doped Silicon	7440-21-3	Chip (Die)	0.220	11.501	2,200	8.36	(mg) Total	Die Attach	% of Total Weight	0.16
Doped Gold	7440-57-5	Wire Bond	0.030	1.568	300		Silver (Ag)	7440-22-4	80.00	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.540	28.229	5,400		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	5,227.600	1,000,000		Copper (Cu)	7440-50-8	3.00	
	5.2276 g Tot	tal Mass								=
		14400						Total	100.00	
			RoHS Recas	t Directive) ar	nd with EU	11.50	(mg) Total	Chip (Die)	% of Total Weight	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).	95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	t Directive) ar	nd with EU	11.50	,	Chip (Die)	% of Total Weight	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifi	e). ed via internal design controls, su	95/EC (RoHS Directive), EU Directive 2011/65/EU (upplier declarations, and /or analytical test data.		•		11.50	(mg) Total Doped Silicon	1		0.22
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PHE 32 PDIP 7:08 PM : 8/8/2012

Compliant to IEC 61249-2-21:2003

Semiconductor Device Ty	De: Pand PL 40 (1 earl) PD	NP (Wide Outline600"\ (52 / SL \		nation Base A opper Alloy (Cu	•			geneous Materials: g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight			5187.00	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	mg/part 3734.640	ppm 574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	570.570	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	363.090	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	363.090	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	129.675	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	25.935	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	9.984	648.938	99,837			Total	100.00	
Iron	7439-89-6	Lead Frame	0.246	15.962	2,456	679.25	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199 0.013	12.940 0.849	1,991		Copper	7440-50-8	95.54	
Zinc Phosphorous	7440-66-6 7723-14-0	Lead Frame Lead Frame	0.013	0.849	131 86		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Polyimide	25038-81-7	Lead Frame	0.022	1.398	215		Zinc	7440-66-6	0.13	
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	1.235	190		Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame	0.004	0,228	35			Total	100.00	
Bismaleimide	79922-55-7	Lead Frame	0.003	0.195	30	3.25	(mg) Total	Lead Lock Tape	% of Total Weight	0.05
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.195	30		Polyimide	25038-81-7	43.00	****
Silver	7440-22-4	Die Attach	0.550	35.763	5,502		Poly - ethylene - terephthalate	25038-59-9	38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	7.152	1,100		NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	3.573	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	1.428	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.717	110			Total		
Dicyandiamide	461-58-5	Die Attach	0.002	0.117	18	48.75	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75,000		Silver	7440-22-4	73	
Gold	7440-57-5	Wire Bond	0.200	13.000	2,000		Epoxy Resin	9003-36-5	15	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250							
					12 500		Diluent	3101-60-8	7	
				81.250 6.500.000	12,500		Diluent Phenolic hardener	3101-60-8 Trade secret	-	
	6.5000	TOTALS: g Total Mass	100.000	6,500.000	12,500 1,000,000		Diluent Phenolic hardener Amine type hardener	3101-60-8 Trade secret 827-43-0	7 3 1	
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Compliant to IEC 61249-2-21:2003

Basic Substance	MICROCHIP Semiconductor Device	e Type: SP 28 (Lead) SPDI	P .300" (M3/MD)		ation Base A oper Alloy (Co				geneous Materials: g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
March Marc			"Contained In"				1665.03	(mg) Total	Mold Compound	9/ of Total Weight	79.8
Media Media Compound Reginal							1005.05		·	ŭ	79.0
Force Patron Trade Society Model Compound 5.558 115,000 5.500 1.500											
Precident State											
Sign							i				
Copper							1			2.50	
Trin	Carbon Black		Mold Compound	0.399	8.329	3,990]	Carbon Black	1333-86-4	0.50	
Copport											
Principromis							218.14				10.45
Projections 7725-14-0 Leaf Farme 0.009 0.150 56 144 151 145											
Post-ordinaries							l				
Response to the properties and the provided by							ł				
Bismalemins 7992-26-75 Least Frame 0.036 0.093 35 1.4M mon Total ted Company (1997) 1.000											
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Phono fream 2643-20-9 (0716-83-5) Lead Frame 0.033 0.055 1.485 5.527							1 04	(mg) Total			0.05
Silver Present 1903-95-5 Dis Attach 0.550 11.495 5.502 Present 1903-95-5 Dis Attach 0.502 11.495 5.502 Present 1903-95-5 Dis Attach 0.502 11.495 5.502 Present 1903-95-5 Dis Attach 0.502 1.503 Present 1903-95-5 Present 1903-95-5 Dis Attach 0.502 1.503 Present 1903-95-5 Present 190							1.04				0.00
Epon Resin 9033-36-5 Dia Attach 0.110 2.297 1,100 Diagnostic 1311-96-8 Dia Attach 0.055 1,148 550 Dia Attach 0.055 1,148 550 Dia Attach 0.055 1,148 550 Dia Attach 0.051 Diagnostic 1,146-1,146 550 Dia Attach 0.051 Diagnostic 1,146-96 Diagnostic 1,							i				
Phenoic hardener Trade secret Die Atlach 0.022 0.489 220 Manne type hardener \$27.43-0 10 to Atlach 0.011 0.230 110 Disyandiamide 461-56-5 Die Atlach 0.002 0.038 18 Gillon 7440-21-3 Chip (Die) 7-500 156-58-3 75,000 Tin 7440-31-5 Negre enterol hardener to the first of the first o							1				
Aminut type hardener (Diluent	3101-60-8	Die Attach	0.055	1.148	550	1	Bismaleimide	79922-55-7	6.00	
Biom 7440-51-5 Chip (bib) 7.500 15553 75.00 1500 1500 1500 1500 1500 1500 1500	Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Silloon 7440-21-3 Chip (Die) 7.500 156.563 75.000 Gild 7440-57-5 Wire Bond 2.000 4.75 2.000 To 7440-51-5 Wire Bond 2.000 4.75 2.000 To 7440-51-5 Plague anterials and the second of the Second 2.007-500 1.000,000 2.007-500 1.000									Total	100.00	
Fig. 1. April 2,000 and 1,440,51-5 branch process and accurate to the service of	Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18	15.66	(mg) Total	Die Attach	% of Total Weight	0.75
Gold 7440-57-5 Nire Bond 10-200 4.175 2.000 Tin 7440-31-5 Newsy measured water table 1 to 2.000 4.175 1.000.000 2.0875 g Total Mass 2.0875 g Total Mass 2.0875 g Total Mass 10-200 2.0875 b 100-000 2.087-500 1,000.000 2.0875.	0:::	7440.04.0	01: (D:)	7.500	450 500	75.000					
Tin 7440:31-5 Prego mountaine pages - label processes and							l				
2.0875 g Total Mass his semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU concept and the substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is not accordance with the above EU Directives have been verified via internal design controls, supplier declarations, and for analytical test data. a chemical substance is absent from the list above, the chemical substance is not redilive reason to believe that unavoidable impurity concentration of the centrology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that unavoidable impurity concentration of the hernical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Total 100.00 Total Weight the protective "Tubes and correct to the best of the date of this document, there is no cerdible reason to believe that unavoidable impurity concentration of the hernical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Total (mg) Total (mg) Chip (Die) % of Total Weight the protective "Tubes" in which the specific product is shapped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer to war and certain "reels" may be made from PVC plastic. Total 100.00 Total (mg) Total Weight (mg) Total (mg)											
Annex type hardener 2,0875 g Total Mass	1111	7440-31-3					ł				
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and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor evices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated anont guarantee the completeness and accuracy of data in this form because it has been complied based on the ranges provided in Material Safety Data Sheets provided by we material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers are material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals or material suppliers. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Icrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited roduct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided Microchip's quotations, sales order acknowledgement, and invoices. Total Total Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			cs. You can access the UL iQTM family of data	bases to obtain	a test report	at		Doped Silicon	7440-21-3	100	
Icrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor evices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated annot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by wathoritat suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Icrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited roduct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. Icrochip Gold T440-57-5 100 Total 100.00 Total 100.00 Total 100.00 Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour for the warrant to the warrant term and conditions of sale. These are provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the		hipped are made from polyvinyl o	chloride (PVC) plastic. "Window envelopes" us	ed to hold the p	oacking slip o	n the outer		<u> </u>	Total	100.00	11
product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Total 100.00 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 / hour hour	icrochip Technology Incorporated believes the informa evices in their original packing materials is true and cor annot guarantee the completeness and accuracy of data w material suppliers. Supplier information is often prof Id raw material suppliers. Information is provided only	rrect to the best of its knowledge a in this form because it has been tected from disclosure as trade so as estimates of the average weig	and belief, as of the date listed in this form. Mi compiled based on the ranges provided in Ma cerets and some information may not have be th of these parts and the average weight of ant	icrochip Techno aterial Safety Da en provided by ticipated signific	ology Incorpo ita Sheets pro subcontract a cant toxic me	rated ovided by assemblers tals	4.18	(mg) Total	Wire Bond	% of Total Weight	0.2
SGS) or of this Certificate of Compliance for semiconductor products. 26.09	oduct warranties provided by Microchip Technology In	corporated and its subsidiaries a						Doped Gold	7440-57-5	100	
26.09 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour	herwise, suffered by users or third parties as a result o	f the users' reliance on the inform								100.00	-
							26.09		leads (pins) - Matte Tin / annealed at 150°C for 1 hour	·	1.25
								Tin	7440-31-5		
Total 100.00									Total	100.00	

SP 28 SPDIP 7:08 PM : 8/8/2012

Basic Substance CAS Number Sub-Component Weight mg/part Sub-Component Sub-Co	MICROCHIP Somiconductor Dovice Type	· 1 20 a n E	UCC 40		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Bails Substance	Semiconductor Device Type	. L ZO (Lead) F									63
Epocy Result (No boronine, No distantomy troods) Trade Secret Model Compound 4.387 50.127 43.873 1.00	Basic Substance	CAS Number			mg/part	ppm	818.39	(mg) Total	Mold Compound	% ot Total Weight	71.63
Premotic Ream No 87 CL SEGS. No disastromy triposes 17868 Secret 2000-02-2 Mod Corregound 1785 20,051 17,649 1765 1765											
Econy, Criscon Mixed 29609-09-22 Mold Compound 1,765 20,051 17,499 Captor Black 1338-90-4 0.30 0.30 0.215 2.45 2.149 0.30 0.30 0.20											
Capper 7440-52-4 Lead Frame 0.48 5.578 4,843 20.29 mg Total Lead Frame 2.011 2.025 2.0											
Silver 7440-508 Lead Frame 25.115 286.946 25.178 48 100 101 102 102 102 102 102 102 102 102											
Silver 7440-224								Carbon Black			<u>J</u>
According 7440-677 Lead Frame 0.036 0.293 256 1.000 1.											
Managemese 7439-96-5 Lead Frame 0.001 0.015 13 Silver 7440-22-4 Die Attach 0.163 1.880 1.880 1.628 2 growing 1740-96-96-10 1 1740-96-96-96-96-96-96-96-96-96-96-96-96-96-							292.83				25.63
Silver 7440-2274 Die Attach 0.168 1.628 1.											
Egovy resin Trado Servet Die Attach 0.051 0.578 050											
Garma-butyrolactone 96-48-0 Die Attach 0.007 0.075 66 Total 10.000											
Silicon 7440-21-3 Chip (Die) 1.210 1.38.25 12.100 2.51 (mg) Total Die Attach (No. OT Total Weight On Total Wei	' '							Manganese			<u>[</u>
Gold 1744-057-5 Wire Bond 0.070 0.800 700 2.00 500 1.416.77 12.400 1.416.77 1.416.											
Tin 1440-31-5 Paying on external waste (pre) - Marte Tri / amesaled at 150°C for 1 four / 12400 14.127 12.400 1.42.50 1.000,000 1.1425 g Total Mass							2.51				0.22
1.1425 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 13.82 Total (mg) Chip (Die) %of Total Weight 1.2 Doped Silcon 7440-21-3 100.00 Total Weight 1.2 Total (mg) Chip (Die) %of Total Weight 1.2 Doped Gold 7440-21-3 100.00 %of Total Weight 1.2 Total (mg) Total Total 100.00 Total Wire Bond %of Total Weight 1.2 Doped Gold 7440-57-5 100 Doped Gold 7440-5											
1.1425 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/55/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no c-redible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding compounds used by Microchip meet the U.S.4 Voltamanability standard for plastics. You can access the U. I QTM family of databases to obtain a test report at http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot used accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety) batas beets provided by a trave and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and are avametrial suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and reasonable and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide	lin	7440-31-5									
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive) 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/95/EC (RoHS Directive). 13.82 Total (mg) Chip (Die) %of Total Weight 1.2 Compilance with the above EU Directive shoes here wiffed via internal design controls, supplier declarations, and /or analytical test data. If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-yes chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-yes chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-world-yes chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-world-yes chemical substance, if any, is not below the threshold of regulatory concern for any regulatory concern for any regulatory scheme world-world-yes chemical substance, if any, is not below the threshold of regulatory concern for any regulatory concern for any regulatory concern for any regulatory scheme world-world-yes chemical substance, if any, is not below the threshold of regulatory concern for any reg				100.000	1,142.530	1,000,000		Gamma-butyrolactone			<u>l</u>
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives). Compilance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales									Total	100.00	
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http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by subcontract assemblers and raw material suppliers. Supplier information is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated dany warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited in Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00	Technology Incorporated's knowledge and belief as of the date of	f this document, t	here is no credible reason to believe that the unavoidab						lotai	100.00	
box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's upon the provided by microchip disclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.			r plastics. You can access the UL iQTM family of databa	ases to obtain a	a test report a	t	0.80	(mg) Total	Wire Bond	% of Total Weight	0.07
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by read to the protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports [SGS] or of this Certificate of Compliance for semiconductor products.]		re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" usec	I to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
microchip recinitionally incorporated and with respect to the information in Microchip standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products. 14.17 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 wor Total Weight 1.2 mg/ Total	devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate-	he best of its know ecause it has been disclosure as trade s of the average we	viedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro sight of these parts and the average weight of anticipate	ochip Technology oty Data Sheets vided by subcooled d significant to	ogy Incorpora s provided by entract assem oxic metals co	ated cannot raw blers and			Total	100.00	_
otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	product warranties provided by Microchip Technology Incorpora	ted and its subsid					14.17	(mg) Total	leads (pins) - Matte Tin	% of Total Weight	1.24
	otherwise, suffered by users or third parties as a result of the us	ers' reliance on the						Tin	7440-31-5	100.00	
Total 100 00	(303) or or this Certificate of Compliance for semiconductor pro	uucis.									

L 28 PLCC 7:08 PM : 8/8/2012

MICROCHIP	NUIT	Di Co		nation Base A	•		•	geneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	De: NHE 32 (Lea	, ,	0/ T -1-1							
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	677.40	(mg) Total	Mold Compound	%ot Total Weight	60
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac	Trade Secret 29690-82-2	Mold Compound Mold Compound	3.675 1.470	41.491 16.596	36,750 14,700		Phenolic Resin Epoxy, Cresol Novolac	Trade Secret 29690-82-2	6.13 2.45	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.180	2.032	1,800		Carbon Black	1333-86-4	0.30	
Carbon Black Copper (Cu)	7440-50-8	Lead Frame	29.760	335.990	297,600		Carbon Black	1333-00-4 Total	100.00	1
Nickle (Ni)	7440-02-0	Lead Frame	1.280	14.451	12,800	361.28	(mg) Total	Lead Frame	% of Total Weight	
Silicon (Si)	7440-02-0	Lead Frame	0.320	3,613	3,200	301.28		7440-50-8	93.00	32
Magnesium (Mg)	7439-95-4	Lead Frame	0.320	0.723	640		Copper (Cu) Nickle (Ni)	7440-50-8	4.00	
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5.760		Silicon (Si)	7440-02-0	1.00	
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640		Magnesium (Mg)	7439-95-4	0.20	
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136		Silver (Ag)	7440-22-4	1.80	
Copper (Cu)	7440-50-8	Die Attach	0.002	0.027	24		- V-13/	Total	100.00	11
Silicon	7440-21-3	Chip (Die)	4.820	54,418	48,200	0.90	(mg) Total	Die Attach	% of Total Weight	
Gold	7440-57-5	Wire Bond	0.100	1.129	1.000	0.00	Silver (Ag)	7440-22-4	80	1
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3,000	33.870	30.000		Epoxy Resin	Trade Secret	17	
•		TOTALS:	100.000	1,129.000	1.000.000		Copper (Cu)	7440-50-8	3	
	1 1290	g Total Mass		,	,,			Total	100.00	4
semiconductor device and its homogenous materials comp			65/EII (PaHS I	Pacaet Directi	ve) and with					
					ve) and with	54.42	Total (mg)	Chip (Die)	% of Total Weight	4.82
	· ·				,	54.42	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.82
chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date demical substance, if any, is not below the threshold of regulated lding compounds used by Microchip meet the UL94 V0 flamn	cal substance is NO of this document, the cory concern for any nability standard for	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unav regulatory scheme world-wide.	device and, to	o the best of N ity concentra	licrochip tion of the	1.13		7440-21-3	100	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulat bolding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/industries/chemicals/pine protective "tubes" in which the specific product is shipped the town and certain "reels" may be made from PVC plastic.	cal substance is NO of this document, the ory concern for any nability standard for lastics/	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unay regulatory scheme world-wide. plastics. You can access the UL iQTM family of the second second second second second sec	device and, to oidable impur databases to o	o the best of N ity concentral btain a test re	licrochip tion of the eport at		Doped Silicon	7440-21-3 Total	100	
a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regular olding compounds used by Microchip meet the UL94 V0 flammtp://ul.com/global/eng/pages/offerings/industries/chemicals/pine protective "tubes" in which the specific product is shipped	cal substance is NO of this document, the ory concern for any nability standard for lastics/ are made from poly this form concerning and correct to the l of data in this form t i is often protected fi i is provided only as	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unar regulatory scheme world-wide. plastics. You can access the UL iQTM family of winyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip Tebest of its knowledge and belief, as of the date libecause it has been compiled based on the rangom disclosure as trade secrets and some inform estimates of the average weight of these parts a	device and, to voidable impur databases to o " used to hold echnology Incosted in this for es provided in mation may no and the averaging the voidable in the count of the averaging the voidable in the averaging t	o the best of N ity concentral btain a test re the packing s orporated's m. Microchip Material Safe t have been p e weight of an	licrochip tion of the sport at slip on the Technology ty Data rovided by ticipated		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 %of Total Weight	. 0.1
a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulat olding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/industries/chemicals/pine protective "tubes" in which the specific product is shipped uter box and certain "reels" may be made from PVC plastic. Icrochip Technology Incorporated believes the information in imiconductor devices in their original packing materials is tructorporated cannot guarantee the completeness and accuracy neets provided by raw material suppliers. Supplier information gnificant toxic metals components. These estimates do not in	cal substance is NO of this document, the ory concern for any nability standard for lastics/ are made from poly this form concerning and correct to the l of data in this form l of is often protected fi is provided only as clude trace levels of onty, express or impli ated and its subsidia	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unauregulatory scheme world-wide. plastics. You can access the UL iQTM family of winyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip Tebest of its knowledge and belief, as of the date libecause it has been compiled based on the rangerom disclosure as trade secrets and some informestimates of the average weight of these parts a dopants, metals, and non-metal materials contailed, with respect to the information provided in the secrets and some information provided in the secrets.	device and, to voidable impur databases to o " used to hold echnology Incosted in this for es provided in nation may no and the averagined within sil	btain a test re the packing s prporated's m. Microchip Material Safe t have been p e weight of an icon devices (dicrochip tion of the eport at dip on the Technology ty Data rovided by ttcipated silicon IC) in ve, limited		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	. 0.1
chemical substance is absent from the list above, the chemical components of the date of t	cal substance is NO' of this document, the ory concern for any nability standard for lastics/ are made from poly this form concerning a and correct to the l of data in this form t is often protected fit is provided only as clude trace levels of http, express or impliated and its subsidia int, and invoices. ges to Material Conte is result of the users	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unaveragulatory scheme world-wide. plastics. You can access the UL iQTM family of evinyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip Tebest of its knowledge and belief, as of the date libecause it has been compiled based on the rangrom disclosure as trade secrets and some informestimates of the average weight of these parts a dopants, metals, and non-metal materials contained, with respect to the information provided in turies are contained in Microchip's standard terms ent Declarations and shall not be liable for any ds' reliance on the information in Material Contents.	device and, to voidable impur databases to o " used to hold echnology Incosted in this for es provided in mation may no and the averagined within sil this declarations and conditio lamages, directantions and conditio	b the best of N ity concentral btain a test re the packing s proprated's rm. Microchip Material Safe t have been p e weight of an icon devices (h. The exclusi ns of sale. The	licrochip tion of the sport at lip on the Technology ty Data rovided by ticipated isilicon IC) in ve, limited ese are	1.13	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	0.1
a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regular biding compounds used by Microchip meet the UL94 V0 flamm p://ul.com/global/eng/pages/offerings/industries/chemicals/pie e protective "tubes" in which the specific product is shipped ter box and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in micronductor devices in their original packing materials is true corporated cannot guarantee the completeness and accuracy eets provided by raw material suppliers. Supplier information becontract assemblers and raw material suppliers. Information pinificant toxic metals components. These estimates do not interest in the provided provided by Microchip Technology Incorporated does not provide any warrandoduct warranties provided by Microchip Technology Incorporated due the provided provided by Microchip Technology Incorporated due the provided and the provided and the provided by Microchip Technology Incorporated due the provided and the provide	cal substance is NO' of this document, the ory concern for any nability standard for lastics/ are made from poly this form concerning a and correct to the l of data in this form t is often protected fit is provided only as clude trace levels of http, express or impliated and its subsidia int, and invoices. ges to Material Conte is result of the users	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the unaveragulatory scheme world-wide. plastics. You can access the UL iQTM family of evinyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip Tebest of its knowledge and belief, as of the date libecause it has been compiled based on the rangrom disclosure as trade secrets and some informestimates of the average weight of these parts a dopants, metals, and non-metal materials contained, with respect to the information provided in turies are contained in Microchip's standard terms ent Declarations and shall not be liable for any ds' reliance on the information in Material Contents.	device and, to voidable impur databases to o " used to hold echnology Incosted in this for es provided in mation may no and the averagined within sil this declarations and conditio lamages, directantions and conditio	b the best of N ity concentral btain a test re the packing s proprated's rm. Microchip Material Safe t have been p e weight of an icon devices (h. The exclusi ns of sale. The	licrochip tion of the sport at lip on the Technology ty Data rovided by ticipated isilicon IC) in ve, limited ese are	1.13	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	3

NHE 32 PLCC 7:08 PM : 8/8/2012

LICROCHIP				nation Base A	•		•	nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: L & NJE 44 (Lead)	PLCC (T2/TC)								e3
		"Contained In"	% Total			1807.79	() T. ()		0/ -/ T -/-11 4 /-1-1/	76.1
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1807.79	(mg) Total	Mold Compound	% ot Total Weight	/6.1
Silica, vitreous	60676-86-0	Mold Compound	64.685	1536.618	646,850		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.864	44.291	18,645		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.228	5.423	2,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	21.460	509.786	214,598			Total	100.00	-
Silver	7440-22-4	Lead Frame	0.417	9.911	4,172	520.24	(mg) Total	Lead Frame	% of Total Weight	21.9
Zirconium	7440-67-7	Lead Frame	0.022	0.520	219		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.026	11		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.104	2.461	1,036		Zirconium	7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.032	0.765	322		Manganese	7439-96-5	0.01	
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.100	42			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.870	20.667	8,700	3.33	(mg) Total	Die Attach	% of Total Weight	0.14
Gold	7440-57-5	Wire Bond	0.050	1.188	500		Silver	7440-22-4	74	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	22.330	9,400		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	2,375.540	1,000,000		Gamma-butyrolactone	96-48-0	3	
	2.3755 g To	otal Mass					-	Total	100.00	•
	y with EU Directive 2002/9		5/EU (RoHS Re	cast Directive	e) and with	20.67	Total (mg)	Chip (Die)	% of Total Weight	0.87
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	•	95/EC (RoHS Directive), EU Directive 2011/6	•	cast Directive	e) and with	20.67	1	Chip (Die)		0.87
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via in	ternal design controls, su	95/EC (RoHS Directive), EU Directive 2011/6	ata.		,	20.67	Total (mg) Doped Silicon		% of Total Weight 100 100.00	0.87
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemic elology Incorporated's knowledge and belief as of the date of ccal substance, if any, is not below the threshold of regulate	aternal design controls, su al substance is NOT an in f this document, there is r ory concern for any regula	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of to credible reason to believe that the unavoctory scheme world-wide.	ata. evice and, to thidable impurity	ne best of Mic	rochip n of the	20.67	1	Chip (Die) 7440-21-3	100	0.87
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date of ical substance, if any, is not below the threshold of regulate ng compounds used by Microchip meet the UL94 V0 flamm	eternal design controls, su al substance is NOT an in f this document, there is r ory concern for any regula ability standard for plastic	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of to credible reason to believe that the unavoctory scheme world-wide.	ata. evice and, to thidable impurity	ne best of Mic	rochip n of the	20.67	1	Chip (Die) 7440-21-3	100	0.87
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemic mology Incorporated's knowledge and belief as of the date of	aternal design controls, su al substance is NOT an in if this document, there is r ory concern for any regula ability standard for plastic stics/	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of the credible reason to believe that the unavotory scheme world-wide.	evice and, to the idable impurity atabases to obt	ne best of Mic concentratio	rochip n of the ort at		Doped Silicon	Chip (Die) 7440-21-3 Total	100	
semiconductor device and its homogenous materials compirective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemical ology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flamm/ful.com/global/eng/pages/offerings/industries/chemicals/platerotective "tubes" in which the specific product is shipped at box and certain "reels" may be made from PVC plastic. To be in their original packing materials is true and correct to of guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimponents. These estimates do not include trace levels of doponents.	al substance is NOT an in fithis document, there is rory concern for any regula ability standard for plastic stics/ re made from polyvinyl chais form concerning substance of its knowledge a form because it has been om disclosure as trade seatates of the average weigh	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of the conductor o	ata. evice and, to the idable impurity atabases to obte the idable impurity atabases to obte idable in the idable	ne best of Mic concentration tain a test rep e packing slip porated's sem nnology Incor Data Sheets uy subcontrac ifficant toxic r	rochip n of the ort at on the iconductor porated provided by t assemblers netals		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	100 100.00 %of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date chical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flamm/ful.com/global/eng/pages/offerings/industries/chemicals/playorotective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information in the sin their original packing materials is true and correct to of guarantee the completeness and accuracy of data in this material suppliers. Information is provided only as estimaterial suppliers. Information is provided only as estimaterial suppliers.	al substance is NOT an in fithis document, there is no ry concern for any regula ability standard for plastic stics/ re made from polyvinyl chis form concerning substice where the best of its knowledge a form because it has been om disclosure as trade se lates of the average weigh ants, metals, and non-metaty, express or implied, wited and its subsidiaries ar	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of the control of the	ata. evice and, to the idable impurity atabases to obte the idable impurity atabases to obte the idable impurity in the idable impurity in the idable in th	ne best of Microncentration tain a test rep e packing slip porated's sem nnology Incor Data Sheets ty subcontrac dificant toxic r the finished p	rochip n of the ort at on the iconductor porated provided by t assemblers netals parts. , limited		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date onical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flamm/ful.com/global/eng/pages/offerings/industries/chemicals/playorotective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic. The process of the first product is shipped as the information in the product of the product is shipped as the product of the product is shipped as the product is shipped as the product in the product in the product in the product of the product in the product is shipped as in the product in the	al substance is NOT an in in this document, there is no ry concern for any regula ability standard for plastic stics/ re made from polyvinyl chis form concerning substice whis form concerning substice whis form because it has been om disclosure as trade severage weigh ints, metals, and non-metate, express or implied, witted and its subsidiaries art, and invoices.	pplier declarations, and /or analytical test of tentional ingredient in the semiconductor of the control of the	ata. evice and, to the idable impurity atabases to obte the idable impurity atabases to obte idable impurity. It is a tabases to obte idable	ne best of Microncentration concentration tain a test reperation at the packing slip to protect the finished prote	rochip n of the ort at on the iconductor porated provided by t assemblers netals parts. , limited e are nsequential	1.19	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 / annealed at 150°C for 1	100 100.00 100.00 % of Total Weight 100 100.00	0.05

L NJE 44 PLCC 7:09 PM : 8/8/2012

MICROCHIP				nation Base A	•			ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: L 68 (Lead) PL									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1380.06	(mg) Total	Mold Compound	%ot Total Weight	28.28
Silica, vitreous	60676-86-0	Mold Compound	24.038	1173.054	240,380		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.693	33.812	6,929		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.085	4.140	848		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	22.087	1077.843	220,869			Total	100.00	
Silver	7440-22-4	Lead Frame	0.429	20.954	4,294	1099.95	(mg) Total	Lead Frame	% of Total Weight	22.54
Zirconium	7440-67-7	Lead Frame	0.023	1.100	225		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.055	11		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	9.983	487.146	99,825		Zirconium	7440-67-7	0.10	
Diester Resin	94-80-4	Die Attach	1.997	97.429	19,965		Manganese	7439-96-5	0.01	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.666	32.476	6,655			Total	100.00	='
Epoxy Resin	9003-36-5	Die Attach	0.333	16.238	3,328	649.53	(mg) Total	Die Attach	% of Total Weight	13.31
Epoxy Resin	13561-08-5	Die Attach	0.333	16.238	3,328		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	12.310	600.728	123,100		Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	5.120	249.856	51,200	Fund	ctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	18.440	899.872	184,400		Epoxy Resin	9003-36-5	3	
		TOTALS:	100.000	4,880.000	1,000,000		Epoxy Resin	13561-08-5	3	
	4 8800 c	Total Mass						Total	100.00	9
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).				ecast Directive	e) and with	600.73	Total (mg)	Chip (Die)	% of Total Weight	12.31
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date o	al substance is NOT a	an intentional ingredient in the semiconductor de	ata. levice and, to t	the best of Mic	rochip	600.73	Total (mg) Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic	al substance is NOT af this document, therefore, concern for any readbility standard for place.	an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavo egulatory scheme world-wide.	ata. levice and, to tidable impurit	the best of Mic y concentratio	rochip on of the	249.86		7440-21-3	100	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date o emical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm	al substance is NOT if this document, therefore concern for any reability standard for plastics/	an intentional ingredient in the semiconductor de is no credible reason to believe that the unavougulatory scheme world-wide. lastics. You can access the UL iQTM family of da	lata. levice and, to t idable impurit atabases to ob	the best of Mic y concentratio tain a test repo	crochip on of the		Doped Silicon	7440-21-3 Total	100	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date o emical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped a	al substance is NOT if this document, ther ory concern for any reability standard for pistics/ are made from polyvii in form concerning the best of its knowled form because it has been disclosure as tractionly as estimates of the setting of the setting as estimates of the setting as the set	an intentional ingredient in the semiconductor de is no credible reason to believe that the unavougulatory scheme world-wide. lastics. You can access the UL iQTM family of danyl chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Tecidge and belief, as of the date listed in this form. It is seen compiled based on the ranges provided in the secrets and some information may not have be he average weight of these parts and the average	ata. levice and, to to didable impurite atabases to observed to hold the through the total safety between the total safety between the total safety be weight of an incomposited to the total safety be weight of an incomposited to the total safety be weight of an incomposited the total safety be weight of an incomposited the total safety be weight of an incomposited the total safety be to the total safety between the t	the best of Mic y concentration tain a test repo he packing slip porated's sem thnology Incor Data Sheets p by subcontrac ticipated signi	crochip on of the p on the iconductor porated provided by ct ficant toxic		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	5.12
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped atter box and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to a nnot guarantee the completeness and accuracy of data in this is w material suppliers. Supplier information is often protected fresmblers and raw material suppliers. Information is often protected fresmblers and raw material suppliers. Information is often protected fresmblers and raw material suppliers. Information is often protected the semblers and raw material suppliers. Information is provided details components. These estimates do not include trace levels	al substance is NOT if this document, there is you concern for any reability standard for plastics/ are made from polyving the best of its knowler form because it has been disclosure as tractorly as estimates of tof dopants, metals, a ty, express or implieted and its subsidiari	an intentional ingredient in the semiconductor de is no credible reason to believe that the unavous egulatory scheme world-wide. Itastics. You can access the UL iQTM family of dainyl chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Teck dige and belief, as of the date listed in this form. Jeen compiled based on the ranges provided in lies escrets and some information may not have be the average weight of these parts and the average and non-metal materials contained within silicon d, with respect to the information provided in this	lata. levice and, to to idable impurite interest to observe the control of the c	the best of Mic y concentration tain a test reported by the porated's semi- chnology Incor y Data Sheets properties by y subcontracticipated significon IC) in the fi	crochip on of the ort at p on the diconductor reporated provided by ot ficant toxic nished p, limited		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	5.12
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic inchnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm sp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped after box and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the innot guarantee the completeness and accuracy of data in this with material suppliers. Supplier information is often protected from semblers and raw material suppliers. Information is provided datals components. These estimates do not include trace levels rts. Crochip Technology Incorporated does not provide any warrandoduct warranties provided by Microchip Technology Incorpora	al substance is NOT f this document, ther ory concern for any reability standard for plastics/ ure made from polyvinhis form concerning the best of its knowled form because it has been disclosure as traconly as estimates of tof dopants, metals, a ty, express or impliested and its subsidiarint, and invoices.	an intentional ingredient in the semiconductor de is no credible reason to believe that the unavous egulatory scheme world-wide. Itastics. You can access the UL iQTM family of dainyl chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Teclique and belief, as of the date listed in this form. It is not to easier the secrets and some information may not have been compiled based on the ranges provided in the secrets and some information may not have been average weight of these parts and the average and non-metal materials contained within silicon did, with respect to the information provided in this es are contained in Microchip's standard terms at the Declarations and shall not be liable for any data	ata. levice and, to to didable impurite the stabases to observed to hold the stabases to observed to hold the stabases to observed the stabases to observed the stabases to observe the stabases to observe the stabases to observe the stabases the stabas	the best of Mic y concentration tain a test reponder the packing slip porated's semi- thology Incor Data Sheets poly subcontrace ticipated signion IC) in the fi The exclusives s of sale. Thes	crochip on of the p on the iconductor porated provided by citicant toxic nished c, limited ice are	249.86	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	5.12
In pilance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulate of the diding compounds used by Microchip meet the UL94 V0 flamm pp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped atter box and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in thices in their original packing materials is true and correct to a nnot guarantee the completeness and accuracy of data in this we material suppliers. Supplier information is often protected from the semblers and raw material suppliers. Information is often protected from the semblers and raw material suppliers. Information is provided attals components. These estimates do not include trace levels rts. Crochip Technology Incorporated does not provide any warrang oduct warranties provided by Microchip Technology Incorporated does not provide any warrang oduct warranties provided by Microchip Technology Incorporated control of the incorporated control of the incorporate control of the in	al substance is NOT f this document, ther ory concern for any reability standard for plastics/ ure made from polyvinhis form concerning the best of its knowled form because it has been disclosure as traconly as estimates of tof dopants, metals, a ty, express or impliested and its subsidiarint, and invoices.	an intentional ingredient in the semiconductor de is no credible reason to believe that the unavous egulatory scheme world-wide. Itastics. You can access the UL iQTM family of dainyl chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Teclique and belief, as of the date listed in this form. It is not to easier the secrets and some information may not have been compiled based on the ranges provided in the secrets and some information may not have been average weight of these parts and the average and non-metal materials contained within silicon did, with respect to the information provided in this es are contained in Microchip's standard terms at the Declarations and shall not be liable for any data	ata. levice and, to to didable impurite the stabases to observed to hold the stabases to observed to hold the stabases to observed the stabases to observed the stabases to observe the stabases to observe the stabases to observe the stabases the stabas	the best of Mic y concentration tain a test reponder the packing slip porated's semi- thology Incor Data Sheets poly subcontrace ticipated signion IC) in the fi The exclusives s of sale. Thes	crochip on of the p on the iconductor porated provided by citicant toxic nished c, limited ice are	249.86	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	5.12

L 68 PLCC 7:09 PM : 8/8/2012

AICROCHIP Semiconductor Device	Type: MG 164 and	FN 3x3x0.9mm (P9)		nation Base A	•			ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type. WIG To (Lead) Q	"Contained In"	% Total	1	1					63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.79	(mg) Total	Mold Compound	% ot Total Weight	63.82
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.095	0.669	30,953	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.095	0.669	30,953		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.191	0.041	1,915		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	22.289	4.814	222,889			Total	100.00	
Iron	7439-89-6	Lead Frame	0.548	0.118	5,483	5.04	(mg) Total	Lead Frame	% of Total Weight	23.33
Silver	7440-22-4	Lead Frame	0.444	0.096	4,444		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.029	0.006	292		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.019	0.004	192		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.273	0.059	2,730		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.007	0.002	70			Total	100.00	,
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70	0.08	(mg) Total	Die Attach	% of Total Weight	0.35
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	1.840	0.397	18,400		Acrylate resins Proprietary	Trade Secret	18	
Tin		lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1.147	53,100		Treated silica	Trade Secret	2	
		TOTALS:	100.000	21.600	1.000.000	Hete	rocyclic organic compound	Trade Secret	2	
	comply with EU Directive 2	Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU		Directive) and	d with EU	1.16	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	5.35
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified chemical substance is absent from the list above, the c	comply with EU Directive 2 I via internal design control chemical substance is NOT	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device	(RoHS Recast	est of Microch	ıip	1.16		Total		5.35
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified the behalf of the list above, the contrology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of reling compounds used by Microchip meet the UL94 Vo	comply with EU Directive 2 I via internal design control themical substance is NOT date of this document, ther gulatory concern for any re flammability standard for p	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable agulatory scheme world-wide.	(RoHS Recast e and, to the be e impurity con	est of Microch centration of	iip the	0.40	Total (mg)	Total Chip (Die) 7440-21-3	% of Total Weight	5.35
s semiconductor device and its homogenous materials active 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 VO:://ul.com/global/eng/pages/offerings/industries/chemice protective "tubes" in which the specific product is shit and certain "reels" may be made from PVC plastic.	comply with EU Directive 2 I via internal design control themical substance is NOT date of this document, ther gulatory concern for any re flammability standard for p als/plastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. lastics. You can access the UL iQTM family of databa	(RoHS Recast e and, to the be le impurity con ses to obtain a	est of Microch centration of test report a	iip the		Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 Vold/incom/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shi	comply with EU Directive 2 I via internal design control themical substance is NOT date of this document, ther agulatory concern for any re flammability standard for p tals/plastics/ pped are made from polyvia on in this form concerning tect to the best of its knowle form because it has been co from disclosure as trade se imates of the average weigl	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable agulatory scheme world-wide. lastics. You can access the UL iQTM family of databary chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safe crets and some information may not have been provint of these parts and the average weight of anticipates.	(RoHS Recast e and, to the be le impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technolo ty Data Sheets rided by subco d significant to	est of Microch centration of test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals cc	t t the outer ductor tted cannot raw blers and		Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shist and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informatic ices in their original packing materials is true and corrective the completeness and accuracy of data in this feriral suppliers. Supplier information is often protected material suppliers. Information is provided only as est	comply with EU Directive 2 I via internal design control themical substance is NOT date of this document, ther gulatory concern for any re flammability standard for p als/plastics/ pped are made from polyvin on in this form concerning a cet to the best of its knowle form because it has been co from disclosure as trade se imates of the average weigl tetals, and non-metal materia warranty, express or implie proprated and its subsidiari	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable agulatory scheme world-wide. lastics. You can access the UL iQTM family of databated and the control of the	e and, to the be le impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technolo ty Data Sheets rided by subco d significant to finished parts claration. The	est of Microch centration of test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals co	t the outer ductor ated cannot raw blers and imponents.		Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0:://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information is their original packing materials is true and corrective their completeness and accuracy of data in this feerial suppliers. Supplier information is often protected material suppliers. Information is provided only as est see estimates do not include trace levels of dopants, method provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporation is provided provide any duct warranties provided by Microchip Technology Incorporated to the provide any duct warranties provided by Microchip Technology Incorporated believes to the provide any duct warranties provided by Microchip Technology Incorporated believes to the provide any duct warranties provided by Microchip Technology Incorporated believes the provide and the provid	comply with EU Directive 2 I via internal design control themical substance is NOT date of this document, ther gulatory concern for any re flammability standard for p als/plastics/ pped are made from polyvin on in this form concerning act to the best of its knowled from because it has been con from disclosure as trade st imates of the average weigl etals, and non-metal material warranty, express or implie proporated and its subsidiari and invoices. changes to Material Conter the users' reliance on the in	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable agulatory scheme world-wide. lastics. You can access the UL iQTM family of databathy choice (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologue and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safescrets and some information may not have been provint of these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this devices are contained in Microchip's standard terms and out the Declarations and shall not be liable for any damage	e and, to the be le impurity con ses to obtain a to hold the pa ogy Incorporatochip Technold ty Data Sheets rided by subcod significant to finished parts claration. The conditions of ses, direct or incorporators and the subcode significant to finished parts claration. The conditions of ses, direct or incorporations of ses, direct or incorporations.	est of Microch centration of test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals co	t the outer ductor sted cannot raw blers and imponents.	0.40	Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	% of Total Weight 100 100.00 % of Total Weight 100 100.00	1.84

MG 16L QFN 7:09 PM : 8/8/2012

MICROCHIP				nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: ML 16 (Lead) QFN									63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.49	(mg) Total	Mold Compound	% ot Total Weight	46.75
Silica, fused	60676-86-0	Mold Compound	42.075	17.545	420,750		Silica, fused	60676-86-0	90.00	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.267	0.945	22.674	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.267	0.945	22,674		Phenolic Resin	Trade Secret	4.85	1
Carbon Black	1333-86-4	Mold Compound	0.140	0.058	1,403		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112			Total	100.00	<u> </u>
Iron	7439-89-6	Lead Frame	0.947	0.395	9,473	16.81	(mg) Total	Lead Frame	% of Total Weight	40.31
Silver	7440-22-4	Lead Frame	0.768	0.320	7,679		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.050	0.021	504		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.033	0.014	333		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.022	0.426	10,218		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.098	2,358		Phosphorous	7723-14-0	0.08	<u>]</u>
Treated silica	Trade Secret	Die Attach	0.026	0.011	262			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.026	0.011	262	0.55	(mg) Total	Die Attach	% of Total Weight	1.31
Silicon	7440-21-3	Chip (Die)	7.890	3.290	78,900		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500		Treated silica	Trade Secret	2	
		TOTALS:	100.000	41.700	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	J
	0.0417 g To	tal Mass						Total	100.00	
Compliance with the above EU Directives has been verifie	d via internal design controls, s	upplier declarations, and /or analytical test data.						7440-21-3	100	
f a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the Chemical substance, if any, is not below the threshold of I	date of this document, there is	no credible reason to believe that the unavoidabl						Total	100.00	ī
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemi		ics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	0.33	(mg) Total	Wire Bond	% of Total Weigh	0.79
The protective "tubes" in which the specific product is shoox and certain "reels" may be made from PVC plastic.	ipped are made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		JGPSSI (D02)	7440-57-5	100	
Microchip Technology Incorporated believes the informat devices in their original packing materials is true and cort guarantee the completeness and accuracy of data in this finaterial suppliers. Supplier information is often protecter aw material suppliers. Information is provided only as es These estimates do not include trace levels of dopants, m	ect to the best of its knowledge orm because it has been compi I from disclosure as trade secre timates of the average weight o	and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe ts and some information may not have been prov t these parts and the average weight of anticipated	ochip Technoloty Data Sheets vided by subcold significant to	ogy Incorpora s provided by entract assem oxic metals co	ited cannot raw blers and			Total	100.00	ī
Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inc n Microchip's quotations, sales order acknowledgement,	orporated and its subsidiaries a		conditions of s	ale. These are	e provided	1.23	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.95
							li .			
Microchip disclaims any duty to notify users of updates o otherwise, suffered by users or third parties as a result of SGS) or of this Certificate of Compliance for semiconduc	the users' reliance on the inform							7440-31-5	100.00	
therwise, suffered by users or third parties as a result of	the users' reliance on the inform							7440-31-5 Total	100.00	

ICROCHIP	Type: ML 20 (Lead) QFN 4	(01/00)		nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type. WIL 20 (Lead) QFN 4:	. ,	0/ Tatal	1			T	1	•	63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	22.31	(mg) Total	Mold Compound	% ot Total Weight	51.79
Silica, fused	60676-86-0	Mold Compound	46.611	20.080	466.110	ĺ	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.512	1.082	25,118	Fnox	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.512	1.082	25,118	-,,	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.067	1,554		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	36.404	15.683	364.040	U		Total	100.00	1
Tin	7440-31-5	Lead Frame	0.093	0.040	934	16.10	(mg) Total	Lead Frame	% of Total Weight	37.37
Silver	7440-22-4	Lead Frame	0.712	0.307	7.119	10.10	Copper	7440-50-8	97.42	37.37
Zinc	7440-66-6	Lead Frame	0.067	0.029	673		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.007	0.029	934		Silver	7440-21-5	1.91	
Silver	7440-27-3	Die Attach	1.053	0.454	10.530		Zinc	7440-22-4	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.243	0.454	2,430		Chromium	7440-66-6	0.18	
			0.027			<u>L</u>	Cilionilani			
Treated silica	Trade Secret	Die Attach		0.012	270			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.027	0.012	270	0.58	(mg) Total	Die Attach	% of Total Weight	1.35
Silicon	7440-21-3	Chip (Die)	4.410	1.900	44,100	L	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.640	0.276	6,400	/	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating or	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.440	1.913	44,400	<u>l</u>	Treated silica	Trade Secret	2	
	0.04308 g Tota	TOTALS:	100.000	43.080	1,000,000	Heter	ocyclic organic compound	Trade Secret Total	2 100.00	
		Il Mass			,,			Total	100.00	4 41
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 2002/9	Il Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU			,,	1.90	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	4.41
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verified	s comply with EU Directive 2002/9 d via internal design controls, su	al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data.	(RoHS Recast	Directive) and	d with EU			Total Chip (Die) 7440-21-3	100.00 % of Total Weight	4.41
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive, iance with the above EU Directives has been verifie emical substance is absent from the list above, the ology incorporated's knowledge and belief as of the	s comply with EU Directive 2002/9 . d via internal design controls, su chemical substance is NOT an int date of this document, there is n	al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device o credible reason to believe that the unavoidable	(RoHS Recast	Directive) and	d with EU		Total (mg)	Total Chip (Die)	100.00 % of Total Weight	4.41
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive, iance with the above EU Directives has been verifie emical substance is absent from the list above, the ology Incorporated's knowledge and belief as of the cal substance, if any, is not below the threshold of a gompounds used by Microchip meet the UL94 V0	s comply with EU Directive 2002/9 d via internal design controls, superchange is NOT an internal design controls, superchange is NOT and internal date of this document, there is negulatory concern for any regular flammability standard for plastic	al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device ocredible reason to believe that the unavoidable tory scheme world-wide.	(RoHS Recast e and, to the b le impurity cor	Directive) and est of Microch acentration of	d with EU		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, liance with the above EU Directives has been verifie emical substance is absent from the list above, the lology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of in g compounds used by Microchip meet the UL94 Vo ul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is sh	s comply with EU Directive 2002/9 d via internal design controls, sup- chemical substance is NOT an int- date of this document, there is n egulatory concern for any regular flammability standard for plastic cals/plastics/	al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device o credible reason to believe that the unavoidable tory scheme world-wide. s. You can access the UL iQTM family of databa	(RoHS Recast e and, to the b le impurity con	Directive) and est of Microchacentration of a test report a	d with EU	1.90	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, iliance with the above EU Directives has been verifie temical substance is absent from the list above, the tology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of any compounds used by Microchip meet the UL94 Voul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is shad certain "reels" may be made from PVC plastic.	s comply with EU Directive 2002/9 d via internal design controls, sup- chemical substance is NOT an int- date of this document, there is n egulatory concern for any regular flammability standard for plastic cals/plastics/ ipped are made from polyvinyl ch	Al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device o credible reason to believe that the unavoidable tory scheme world-wide. s. You can access the UL iQTM family of databa	(RoHS Recast e and, to the b le impurity cor ses to obtain a to hold the pa	Directive) and est of Microch icentration of a test report a icking slip on	d with EU	1.90	Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive obliance with the above EU Directives has been verifies the medical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of any compounds used by Microchip meet the UL94 Voul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. The chip Technology Incorporated believes the informates in their original packing materials is true and cornate the completeness and accuracy of data in this it all suppliers. Supplier information is often protected atterial suppliers. Information is provided only as estimates do not include trace levels of dopants, metallical suppliers.	s comply with EU Directive 2002/9 d via internal design controls, sup- chemical substance is NOT an internal date of this document, there is n egulatory concern for any regular flammability standard for plastic cals/plastics/ ipped are made from polyvinyl ch ion in this form concerning subst ect to the best of its knowledge a orm because it has been compile from disclosure as trade secrets timates of the average weight of t	al Mass 15/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable story scheme world-wide. s. You can access the UL iQTM family of databandoride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technolond belief, as of the date listed in this form. Micro d based on the ranges provided in Material Safe and some information may not have been provides parts and the average weight of anticipate.	e and, to the ble impurity consists to obtain a to hold the part of the part o	Directive) and est of Microchacentration of a test report a cking slip on ted's semiconogy Incorpora is provided by outract assem exic metals cc metals cc	d with EU hip the t the outer ductor ted cannot raw blers and	1.90	Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, bliance with the above EU Directives has been verified the mical substance is absent from the list above, the hology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 VO (ul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is should not entain "reels" may be made from PVC plastic. The chronology Incorporated believes the informaties in their original packing materials is true and cornitee the completeness and accuracy of data in this is also suppliers. Information is often protected laterial suppliers. Information is provided only as estated.	s comply with EU Directive 2002/9 d via internal design controls, superhemical substance is NOT an internal date of this document, there is negulatory concern for any regular flammability standard for plastic cals/plastics/ ipped are made from polyvinyl choin in this form concerning substact to the best of its knowledge a form because it has been compiled from disclosure as trade secrets timates of the average weight of teals, and non-metal materials cowarranty, express or implied, wit orporated and its subsidiaries are	al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable tory scheme world-wide. s. You can access the UL iQTM family of databandloride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Micro d based on the ranges provided in Material Safe and some information may not have been provides and the average weight of anticipate intained within silicon devices (silicon IC) in the th respect to the information provided in this de-	e and, to the ble impurity consists to obtain a to hold the party of the party of the party of the party bata Sheets of significant to finished parts claration. The	Directive) and est of Microchacentration of a test report a cking slip on ted's semicon ogy Incorpora provided by intract assem exic metals contact the contact of the cont	d with EU hip the t the outer ductor ted cannot raw blers and mponents.	1.90	Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, illiance with the above EU Directives has been verified the mical substance is absent from the list above, the hology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 Voul.com/global/eng/pages/offerings/industries/chemi rotective "tubes" in which the specific product is shot certain "reels" may be made from PVC plastic. The prochology Incorporated believes the informat in the information in the information or the information in the information i	s comply with EU Directive 2002/9 d via internal design controls, sup- chemical substance is NOT an internal date of this document, there is n egulatory concern for any regular flammability standard for plastic cals/plastics/ ipped are made from polyvinyl ch ion in this form concerning subst ect to the best of its knowledge a orm because it has been compile from disclosure as trade secrets timates of the average weight of it etals, and non-metal materials co- warranty, express or implied, wit corporated and its subsidiaries are and invoices.	al Mass 15/EC (RoHS Directive), EU Directive 2011/65/EU poplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable tory scheme world-wide. s. You can access the UL iQTM family of databa alloride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Micro d based on the ranges provided in Material Safe and some information may not have been provides parts and the average weight of anticipate intained within silicon devices (silicon IC) in the th respect to the information provided in this de- e contained in Microchip's standard terms and co- clarations and shall not be liable for any damage	e and, to the ble impurity consess to obtain a to hold the part ochip Technol ty Data Sheets dided by subcd dignificant to finished parts claration. The conditions of sets, direct or in-	Directive) and est of Microchacentration of a test report a acking slip on test's semiconogy Incorporate provided by intract assemboxic metals contained. Exclusive, limitale. These are direct, consecutive, consecu	t the outer ductor sted cannot raw blers and omponents.	0.28	Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.64

ML 20 QFN 7:09 PM : 8/8/2012

AICROCHIP Semiconductor Device	Type: MO 20 a	OEN care our (PR)		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type. IVIQ 20 (Lead)	` ,	0/ 7-1-1				1	1	ı	65
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	35.52	(mg) Total	Mold Compound	% ot Total Weight	52.91
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190		Silica, fused	60676-86-0	90.00	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25.661	Enov	v Resin (NLP # 500-033-5)	Trade Secret	4.85	1
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661	Ерох	Phenolic Resin	Trade Secret	4.85	1
Carbon Black	1333-86-4	Mold Compound	0.159	0.107	1,587		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.362	23.738	353,616		Carbon Black	Total	100.00	4
Tin	7440-31-5	Lead Frame	0.091	0.061	908	24.37	(mg) Total	Lead Frame	% of Total Weight	
1111	7440 01 0	Lodd Framo	0.001	0.001	300	24.57	(ilig) Total	Leau France	/601 Total Weight	1 30.3
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.065	0.044	653		Tin	7440-31-5	0.25	1
Chromium	7440-47-3	Lead Frame	0.003	0.044	908		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1,412	0.948	14.118		Zinc	7440-66-6	0.18	1
Acrylate resins Proprietary	Trade Secret	Die Attach	0.326	0.219	3,258		Chromium	7440-66-6	0.16	1
Treated silica	Trade Secret	Die Attach	0.036	0.024	362	l.	Ontonium	Total	100.00	4
Heterocyclic organic compound	Trade Secret	Die Attach	0.036	0.024	362	1.22	(mg) Total	Die Attach	% of Total Weight	
						1.22				1.81
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41,600		Silver	7440-22-4	78	4
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400		Acrylate resins Proprietary	Trade Secret	18	4
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42,800		Treated silica	Trade Secret	2	4
		TOTALS:	100.000	67.130	1,000,000	Heter	rocyclic organic compound	Trade Secret	2]
	0.06713	g Total Mass						Total	100.00	
		e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.79	Total (mg)	Chip (Die)	% of Total Weight	4.16
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.79	Total (mg) Doped Silicon			4.16
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified the chemical substance is absent from the list above, the connology Incorporated's knowledge and belief as of the	d via internal design cont chemical substance is NC date of this document, th	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device terms is no credible reason to believe that the unavoidable	e and, to the b	est of Microch	ip	2.79	, 0,	Chip (Die)	% of Total Weight	<u> </u>
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified themical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of reling compounds used by Microchip meet the UL94 VO	i via internal design cont chemical substance is NC date of this document, the egulatory concern for any flammability standard fo	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device terms is no credible reason to believe that the unavoidable	e and, to the b	est of Microch	ip the	2.79	, 0,	Chip (Die) 7440-21-3	% of Total Weight	
nctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 V0:://ul.com/global/eng/pages/offerings/industries/chemical	d via internal design cont chemical substance is NC date of this document, the egulatory concern for any flammability standard for cals/plastics/	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicence is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 V0:://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic.	I via internal design cont chemical substance is NC date of this document, the egulatory concern for any flammability standard for cals/plastics/ pped are made from poly on in this form concernir	crols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gregulatory scheme world-wide. To plastics. You can access the UL iQTM family of databativity of the company of the co	e and, to the b le impurity con ses to obtain a to hold the pa	est of Microch ncentration of a test report a ncking slip on ted's semicon	ip the t the outer		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight	0.54
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the choology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 V0://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic.	d via internal design control themical substance is NC date of this document, the equilatory concern for any flammability standard for als/plastics/ pped are made from polyon in this form concernificat to the best of its known because it has been from disclosure as trade imates of the average we	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable y regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used	e and, to the ble impurity consess to obtain a to hold the part ochip Technol ty Data Sheets rided by subccd significant to	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by portract assem oxic metals cc	ip the the outer ductor ted cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.54
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), apliance with the above EU Directives has been verified chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of right of the compounds used by Microchip meet the UL94 V0 (21/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this ferial suppliers. Supplier information is often protected material suppliers. Information is provided only as est see estimates do not include trace levels of dopants, more constants.	d via internal design control of the control of the control of this document, the gulatory concern for any flammability standard for cals/plastics/ pped are made from polyon in this form concerning to the best of its know orm because it has been from disclosure as trade imates of the average we etals, and non-metal mates.	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicence is no credible reason to believe that the unavoidable pregulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativity of the control of the	e and, to the ble impurity conses to obtain a to hold the party land to hold the party land to hold the party late Sheets ided by subcod significant to finished party	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co	ip the the outer ductor ted cannot raw blers and mponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight	0.54
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 VO:://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatices in their original packing materials is true and corrective the completeness and accuracy of data in this fierial suppliers. Supplier information is provided only as estinaterials uppliers. Information is provided only as estinates do not include trace levels of dopants, morochip Technology Incorporated does not provide any	d via internal design controlled in the controll	proise, supplier declarations, and /or analytical test data. The an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable gregulatory scheme world-wide. If plastics, You can access the UL iQTM family of databative for the companient of the comp	e and, to the ble impurity columns to obtain a to hold the particle of the par	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals cos.	ip the the outer ductor ited cannot raw blers and imponents.		Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.54
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified chemical substance is absent from the list above, the choology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of reding compounds used by Microchip meet the UL94 V0 c://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this ferial suppliers. Supplier information is often protected material suppliers. Information is provided only as est see estimates do not include trace levels of dopants, my duct warranties provided by Microchip Technology Incorporated does not provide any fuctorchip's quotations, sales order acknowledgement, is oochip disclaims any duty to notify users of updates or	d via internal design controlled in the controll	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable of regulatory scheme world-wide. To plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technolyledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe is secrets and some information may not have been proight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the silicon, with respect to the information provided in this decided, with respect to the information provided in this decided.	e and, to the ble impurity conses to obtain a to hold the part ochip Technol or to hold the part ochip Technol of significant to finished parts claration. The conditions of set, direct or in	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by untract assem oxic metals co s. exclusive, lim iale. These are	the outer ductor ted cannot raw blers and mponents. ited provided quential or	0.36	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.54
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive): pliance with the above EU Directives has been verified themical substance is absent from the list above, the conclopy Incorporated's knowledge and belief as of the hical substance, if any, is not below the threshold of rolling compounds used by Microchip meet the UL94 Vo (//ul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is shi and certain "reels" may be made from PVC plastic. The product is shing the product of the product is in their original packing materials is true and corrective the completeness and accuracy of data in this for it is suppliers. Supplier information is often protected naterial suppliers. Supplier information is provided only as estimaterial suppliers. Information is provided only as estimaterial suppliers. Information is provided only as estimated to not include trace levels of dopants, more productive than the provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated does not provided by Microchip Technology Inc	d via internal design controlled in the controll	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable pregulatory scheme world-wide. It plastics. You can access the UL iQTM family of databate principles of the databate proving the control of the	e and, to the ble impurity conses to obtain a to hold the part ochip Technol or to hold the part ochip Technol of significant to finished parts claration. The conditions of set, direct or in	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by untract assem oxic metals co s. exclusive, lim iale. These are	the outer ductor ted cannot raw blers and mponents. ited provided quential or	0.36	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	4.28

MQ 20 QFN 7:09 PM : 8/8/2012

ICROCHIP				nation Base A	•		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	e Type: ML 28 (Lead) C	QFN 6x6 mm (M4/MM)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	52.76	(mg) Total	Mold Compound	% ot Total Weight	51.93
Silica, fused	60676-86-0	Mold Compound	46.737	47.485	467.370		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25.186	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.885	38.491	378,847			Total	100.00	•
Tin	7440-31-5	Lead Frame	0.097	0.099	972	39.51	(mg) Total	Lead Frame	% of Total Weight	38.89
Silver	7440-22-4	Lead Frame	0.741	0.753	7,409		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.070	0.071	700		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.097	0.099	972		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.413	0.420	4,134		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.095	0.097	954		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.011	0.011	106		<u>, </u>	Total	100.00	1
Heterocyclic organic compound	Trade Secret	Die Attach	0.011	0.011	106	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32.900		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.950	0.965	9.500		Acrylate resins Proprietary	Trade Secret	18	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100		Treated silica	Trade Secret	2	
		TOTALS:	100.000	101.600	1,000,000	H	eterocyclic organic compou	Trade Secret	2	
	0 1016 a	Total Mass						Total	100.00	
emiconductor device and its homogenous materials		002/95/EC (RoHS Directive), EU Directive 2011/6	5/EU (RoHS Re	cast Directive	a) and with		1			
recuve 2002/33/EG (Ena-of-Life Venicles (ELV) Direct	ive).		(e) and with	3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29
rective 2002/53/EC (End-of-Life Vehicles (ELV) Direct pliance with the above EU Directives has been verified	•	s, supplier declarations, and /or analytical test d	•		e) and with	3.34	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	3.29
, , ,	d via internal design controls		lata.		•	3.34	, ,			3.29
oliance with the above EU Directives has been verified nemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the	d via internal design controls chemical substance is NOT a date of this document, there	in intentional ingredient in the semiconductor d	lata. evice and, to th	ne best of Mic	rochip	3.34	, ,	7440-21-3	100	3.29
liance with the above EU Directives has been verified emical substance is absent from the list above, the coology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of rong compounds used by Microchip meet the UL94 VO	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re- flammability standard for pla	in intentional ingredient in the semiconductor d is no credible reason to believe that the unavo gulatory scheme world-wide.	lata. evice and, to thidable impurity	ne best of Mic	rochip on of the	0.97	, ,	7440-21-3	100	
oliance with the above EU Directives has been verified	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re- flammability standard for pla als/plastics/ pped are made from polyvin	n intentional ingredient in the semiconductor d is no credible reason to believe that the unavo gulatory scheme world-wide. astics. You can access the UL iQTM family of d	lata. evice and, to the idable impurity atabases to obt	ne best of Mic concentration	rochip on of the ort at		Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified nemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of rong compounds used by Microchip meet the UL94 VO (ul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is shi	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any reflammability standard for place als/plastics/ pped are made from polyving tic. on in this form concerning sect to the best of its knowled in this form because it has beted from disclosure as tradevided only as estimates of the	in intentional ingredient in the semiconductor does not believe that the unavous gulatory scheme world-wide. astics. You can access the UL iQTM family of does not believe that the unavous gulatory scheme world-wide. Astics. You can access the UL iQTM family of does not be in the control of the control of the control of the control of the complete that is the complete that the complete that of the complete that is served that is server that is the control of the complete that is the control of t	lata. evice and, to the idable impurity atabases to obtused to hold the hnology incorp Microchip Teci Material Safety eeen provided be weight of anti-	ne best of Mic concentration tain a test rep e packing slip porated's sem phology Incor Data Sheets by subcontrac icipated signi	rochip on of the ort at on the iconductor porated provided by t ficant toxic		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified nemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of rung compounds used by Microchip meet the UL94 V0 (ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic in their original packing materials is true and correct guarantee the completeness and accuracy of data naterial suppliers. Supplier information is often protemblers and raw material suppliers. Information is pro-	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any reflammability standard for place of the standard form concerning sect to the best of its knowled in this form because it has been toted from disclosure as tradevided only as estimates of the levels of dopants, metals, arwarranty, express or implied or or porated and its subsidiaries.	in intentional ingredient in the semiconductor does not believe that the unavous gulatory scheme world-wide. astics. You can access the UL iQTM family of does not believe that the unavous gulatory scheme world-wide. astics. You can access the UL iQTM family of does not be the complex of t	lata. evice and, to the idable impurity atabases to obtused to hold the hnology Incorp Microchip Teck Material Safety een provided be weight of ant devices (silico is declaration.	ne best of Microconcentration tain a test reperent a packing slip to content a seminology Incorest packing subcontracticipated signin IC) in the fir	rochip on of the ort at on the iconductor porated provided by t ficant toxic nished parts.		Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.95
pliance with the above EU Directives has been verified nemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of rung compounds used by Microchip meet the UL94 V0 (ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plas which is in their original packing materials is true and corrot guarantee the completeness and accuracy of data material suppliers. Information is often protemblers and raw material suppliers. Information is prossible some protemblers and raw material suppliers. Information is prossible components. These estimates do not include trace which prechnology Incorporated does not provide any lock warranties provided by Microchip Technology Incorporated to the substance of the provided by Microchip Technology Incorporated to the list of the provided by Microchip Technology Incorporated to the list of the provided by Microchip Technology Incorporated to the list of the provided by Microchip Technology Incorporated to the list of the provided by Microchip Technology Incorporated to the list of the provided by Microchip Technology Incorporated the provided by Microch	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any reflammability standard for plants/plastics/ pped are made from polyvingtic. on in this form concerning sect to the best of its knowled in this form because it has bected from disclosure as tradevided only as estimates of the levels of dopants, metals, are warranty, express or implied or or porated and its subsidiarie legement, and invoices. changes to Material Content of the users' reliance on the	in intentional ingredient in the semiconductor of its no credible reason to believe that the unavous gulatory scheme world-wide. astics. You can access the UL iQTM family of divided in the semiconductor of the provided in the semiconductor of the semiconductor	lata. evice and, to the idable impurity atabases to observe the control of the c	ne best of Microconcentration at test reperent and a test reperent	rochip on of the ort at o on the iconductor reporated provided by t ficant toxic nished parts. t, limited e are	0.97	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 annealed at 150°C for 1	100 100.00 % of Total Weight 100	0.95
pliance with the above EU Directives has been verified nemical substance is absent from the list above, the cology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of rong compounds used by Microchip meet the UL94 V0 (ul.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plas chip Technology Incorporated believes the informaties in their original packing materials is true and corrot guarantee the completeness and accuracy of data naterial suppliers. Supplier information is often protenblers and raw material suppliers. Information is prossiblers and raw material suppliers. Information is prossiblers and raw material suppliers. These estimates do not include trace chip Technology Incorporated does not provide any ct warranties provided by Microchip Technology Inced in Microchip's quotations, sales order acknowled chip disclaims any duty to notify users of updates or terwise, suffered by users or third parties as a result-	d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any reflammability standard for plants/plastics/ pped are made from polyvingtic. on in this form concerning sect to the best of its knowled in this form because it has bected from disclosure as tradevided only as estimates of the levels of dopants, metals, are warranty, express or implied or or porated and its subsidiarie legement, and invoices. changes to Material Content of the users' reliance on the	in intentional ingredient in the semiconductor of its no credible reason to believe that the unavous gulatory scheme world-wide. astics. You can access the UL iQTM family of divided in the semiconductor of the provided in the semiconductor of the semiconductor	lata. evice and, to the idable impurity atabases to observe the control of the c	ne best of Microconcentration at test reperent and a test reperent	rochip on of the ort at o on the iconductor reporated provided by t ficant toxic nished parts. t, limited e are	0.97	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.95

ML 28 QFN 7:09 PM : 8/8/2012

Semiconductor Device	·Type: ML or MM 2	28 (Lead) QFN-S 6x6mm (M2/MB)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	52.77	(mg) Total	Mold Compound	% ot Total Weight	51.94
Silica, fused	60676-86-0	Mold Compound	46,746	47,494	467,460		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,191	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,191		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.145	37.739	371.450			Total	100.00	
Iron	7439-89-6	Lead Frame	0.914	0.928	9.137	39.50	(mg) Total	Lead Frame	% of Total Weight	38.88
Silver	7440-22-4	Lead Frame	0.741	0.753	7,407	00.00	Copper	7440-50-8	95.54	00.00
Zinc	7440-66-6	Lead Frame	0.049	0.049	486		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.032	0.033	321		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.391	0.397	3,911		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.100	0.101	996		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.033	0.034	334		Filospilorous	Total	100.00	,
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
			0.002	0.002	42	0.54				0.55
Butyl cellosolve acetate	112-07-2	Die Attach					Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900		Epoxy Resin	9003-36-5	19	
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500	t-	Butyl phenyl glycidyl ether	3101-60-8	6	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100		Phenolic hardener	92-88-6	0	
	s comply with EU Directiv	TOTALS: g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	100.000 (RoHS Recast	101.600 Directive) and	1,000,000 d with EU	3.34	Butyl cellosolve acetate Total (mg)	Total Chip (Die)	1 100.00 % of Total Weight	3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifice chemical substance is absent from the list above, the	s comply with EU Directiv). Id via internal design cont chemical substance is NO e date of this document, th	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidab	(RoHS Recast	Directive) and	d with EU	3.34		Total		3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verified themical substance is absent from the list above, the anology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of	s comply with EU Directiv). d via internal design cont chemical substance is NC e date of this document, tl regulatory concern for an l flammability standard fo	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidab	(RoHS Recast e and, to the b le impurity cor	Directive) and sest of Microchacentration of	d with EU lip the	0.97	Total (mg)	Total Chip (Die) 7440-21-3	% of Total Weight	3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verified themical substance is absent from the list above, the anology Incorporated's knowledge and belief as of themical substance, if any, is not below the threshold of thing compounds used by Microchip meet the UL94 Volucom/global/eng/pages/offerings/industries/chem	s comply with EU Directiv). d via internal design cont chemical substance is NC e date of this document, the regulatory concern for any flammability standard fo cals/plastics/	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidably regulatory scheme world-wide.	(RoHS Recast e and, to the bot le impurity con	Directive) and est of Microchacentration of a test report a	d with EU		Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verified themical substance is absent from the list above, the anology Incorporated's knowledge and belief as of the inical substance, if any, is not below the threshold of thing compounds used by Microchip meet the UL94 V(£/Uul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. The protective type is the information is often protected the completeness and accuracy of data in this erial suppliers. Supplier information is often protected atterial suppliers. Information is provided only as exercised.	s comply with EU Directive. In divide internal design control chemical substance is NO and a comment, the date of this document, the regulatory concern for any of flammability standard for cals/plastics/ Imped are made from polytic in this form concerning the	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabily regulatory scheme world-wide. r plastics. You can access the UL iQTM family of database.	e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technoloty Data Sheets vided by subco d significant to	est of Microch centration of a test report a cking slip on led's semicon ogy Incorpora provided by ontract assem	t the outer ductor ted cannot raw blers and		Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verified themical substance is absent from the list above, the anology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of thing compounds used by Microchip meet the UL94 V(£/Uul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. The protective the completeness and accuracy of data in this arial suppliers. Supplier information is often protected material suppliers. Information is provided only as ease estimates do not include trace levels of dopants, noochip Technology Incorporated does not provide any	s comply with EU Directivolo. d via internal design control comment of this document, the regulatory concern for an all flammability standard for cals/plastics/ iipped are made from polyiipped are made from polyiipped are made from polyiipped are to the best of its known form because it has been a from disclosure as tradestimates of the average we tetals, and non-metal mat warranty, express or improprorated and its subsidi	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databaty vinyl chloride (PVC) plastic. "Window envelopes" used ang substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been provelejth to f these parts and the average weight of anticipate	e and, to the be le impurity cor uses to obtain a to hold the pa ogy Incorporat ochip Technol aty Data Sheets vided by subco d significant to finished parts claration. The	est of Microch incentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem intract assem intract assem intract assem	d with EU tip the t the outer ductor tted cannot raw blers and imponents.		Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive opliance with the above EU Directives has been verified themical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of diing compounds used by Microchip meet the UL94 V(1/U.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatices in their original packing materials is true and corantee the completeness and accuracy of data in this erial suppliers. Supplier information is often protecte material suppliers. Information is provided only as ese estimates do not include trace levels of dopants, in ochip Technology Incorporated does not provide any luct warranties provided by Microchip Technology Incorporated does not provide any luct warranties provided by Microchip Technology Incorchip's quotations, sales order acknowledgement, ochip disclaims any duty to notify users of updates of	s comply with EU Directive. In divia internal design control of the design control of t	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databaty in the company of the company	e and, to the bile impurity consists to obtain a to hold the part oochip Technolisty Data Sheets vided by subcodisty Data Sheets vided by subcodisty Data Sheets vided by subcodisty Data Sheets vided by subcodistificant to finished parts conditions of s	Directive) and est of Microch a test report a cking slip on teed's semicon ogy Incorpora provided by ontract assembly intract assembly in the contract as a	d with EU the the outer ductor sted cannot raw blers and omponents. ited e provided	0.97	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.95

ML MM 28 QFN-S 7:10 PM : 8/8/2012

MICROCHIP Semiconductor Device	Type: MI 40 and	OEN consorm (20)		nation Base /				geneous Materials: pc boards, displays	1	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type. WIL 40 (Lead		0/ T-4-I					1		63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part		45.49	(mg) Total	Mold Compound	% ot Total Weight	45.04
Silica, fused	60676-86-0		40.536	40.941	ppm		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)		Mold Compound Mold Compound	2.184	2.206	405,360 21.844	F	y Resin (NLP # 500-033-5)	Trade Secret	90.00 4.85	
Phenolic Resin	Trade Secret Trade Secret	Mold Compound	2.184	2.206	21,844	Epox	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.135	0.136	1,351		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	46.925	47.394	469.248		Calbuil black			<u>I</u>
								Total	100.00	
Tin	7440-31-5	Lead Frame	0.120	0.122	1,204	48.65	(mg) Total	Lead Frame	% of Total Weight	48.17
Silver	7440-22-4	Lead Frame	0.918	0.927	9,176		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.087	0.088	867		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.120	0.122	1,204		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.226	0.228	2,262		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.006	0.006	58			Total	100.00	•
Heterocyclic organic compound	Trade Secret	Die Attach	0.006	0.006	58	0.29	(mg) Total	Die Attach	% of Total Weight	0.29
Silicon	7440-21-3	Chip (Die)	2.720	2.747	27,200		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600	"	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	101.000	1.000.000	Heter	ocyclic organic compound	Trade Secret	2	
	0.1010	g Total Mass			.,,		,	Total	100.00	<u>I</u>
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ((RoHS Recast	Directive) an	d with EU	2.75	Total (mg)	Chip (Die)	% of Total Weight	2.72
ompliance with the above EU Directives has been verified	d via internal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
a chemical substance is absent from the list above, the cechnology incorporated's knowledge and belief as of the nemical substance, if any, is not below the threshold of r	date of this document, t egulatory concern for an	here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e impurity cor	centration of	the			Total	100.00	
olding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi	cals/plastics/			•	L	0.87	(mg) Total	Wire Bond	% of Total Weight	0.86
ox and certain "reels" may be made from PVC plastic.	pped are made nom por	yrmyr omoriae (r vo) plastic. Ymae'n envelopes asea	to note the pe	oking slip on	the outer		Doped Gold	7440-57-5	100	
icrochip Technology Incorporated believes the informati								Total	100.00	
uarantee the completeness and accuracy of data in this f aterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as es these estimates do not include trace levels of dopants, m	orm because it has been I from disclosure as trad timates of the average w	compiled based on the ranges provided in Material Safe e secrets and some information may not have been proveight of these parts and the average weight of anticipated	ty Data Sheets ided by subco d significant to	provided by ntract assem oxic metals co	raw blers and					
aterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as est	orm because it has been from disclosure as trad timates of the average w etals, and non-metal mat warranty, express or imp orporated and its subsid	compiled based on the ranges provided in Material Safet e secrets and some information may not have been proveight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this deci-	ty Data Sheets ided by subco d significant to finished parts claration. The	provided by ntract assem oxic metals co exclusive, lim	raw blers and omponents. nited	2.95	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.92
aterial suppliers. Supplier information is often protected in material suppliers. Information is provided only as est hese estimates do not include trace levels of dopants, mo- icrochip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated.	orm because it has been if rom disclosure as trad timates of the average we teals, and non-metal mar warranty, express or imporporated and its subsidiand invoices.	compiled based on the ranges provided in Material Safet e secrets and some information may not have been prov eight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this dec laries are contained in Microchip's standard terms and c etent Declarations and shall not be liable for any damage	ty Data Sheets ided by subcod significant to finished parts claration. The conditions of s	provided by ntract assem oxic metals co exclusive, lim ale. These ar	raw blers and pmponents. nited e provided quential or	2.95	(mg) Total Tin	leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	2.92
aterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as est lese estimates do not include trace levels of dopants, m crochip Technology Incorporated does not provide any oduct warranties provided by Microchip Technology Inc Microchip's quotations, sales order acknowledgement, in crochip disclaims any duty to notify users of updates or herwise, suffered by users or third parties as a result of	orm because it has been if rom disclosure as trad timates of the average we teals, and non-metal mar warranty, express or imporporated and its subsidiand invoices.	compiled based on the ranges provided in Material Safet e secrets and some information may not have been prov eight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this dec laries are contained in Microchip's standard terms and c etent Declarations and shall not be liable for any damage	ty Data Sheets ided by subcod significant to finished parts claration. The conditions of s	provided by ntract assem oxic metals co exclusive, lim ale. These ar	raw blers and pmponents. nited e provided quential or	2.95		leads (pins) - Matte Tin / annealed at 150°C for 1 hour		2.92

ML 40 QFN 7:10 PM : 8/8/2012

Basic Substance CAS Number SU-Component Weight migrant ppm (75.12 (mg) Total Mode Compound Scient, based Occasional Scientific Scienti	ICROCHIP Semiconductor Device	e Type: MI 44 (Local)	OFN even a mm (T2/TD)		nation Base A	,		•	nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	Semiconductor Device	rype. WL 44 (Lead)	, ,	% Total	ı						
Epow Ream NU P 500/035-0 Trade Societ Mod Compound 1,934 3,643 19,337 Pennet Ream Trade Societ Mod Compound 1,934 3,643 19,357 Pennet Ream Trade Societ 4,165 Pennet Ream 1,176 Pennet Ream	Basic Substance	CAS Number		,	mg/part	ppm	75.12	(mg) Total	Mold Compound	% ot Total Weight	39.87
Phenotic Resin	Silica, fused	60676-86-0	Mold Compound	35.883	67.604	358,830		Silica, fused	60676-86-0	90.00	
Cashon Black	Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337	Epo	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Copper (7439-99) Lead Frame (1.78 220) 11.783 94.48 cmg Test Lead Frame (1.78 220) 94.49 (1.783 94.48 cmg Test Lead Frame (1.784 220) 94.49 (1.785 94.49 cmg Test Lead Frame (1.785 94.49 cmg Test Lea	Phenolic Resin	Trade Secret	Mold Compound	1.934		19,337		Phenolic Resin	Trade Secret	4.85	
inn 7439-89-6 Lead Frame 0.955 18:00 9.562 Coper 7440-22-4 Lead Frame 0.955 18:00 9.562 Coper 7440-22-4 Lead Frame 0.955 18:00 9.562 Coper 7440-22-4 Coper 744	Carbon Black	1333-86-4	Mold Compound	0.120	0.225	1,196		Carbon Black	1333-86-4	0.30	
Silver 7440-224 Least Frame 0.053 0.118 027 Phosphorus 7740-224 Least Frame 0.053 0.118 027 Phosphorus 7740-224 Least Frame 0.053 0.118 0.27 Phosphorus 7723-14-0 Least Frame 0.063 0.118 0.27 Phosphorus 7723-14-0 Least Frame 0.063 0.118 0.27 Phosphorus 7723-14-0 Least Frame 0.064 1.0.076 1.414 Silver 7440-224 1.91 Silver 7440-224 1.91 Phosphorus 7723-14-0 Least Frame 0.064 1.0.076 1.414 Silver 7440-224 1.91 Phosphorus 7723-14-0 Least Frame 0.064 1.0.076 1.414 Phosphorus 7723-14-0 Least Frame 0.064 1.414 Phosphorus 7723-14-0 Least	Copper	7440-50-8	Lead Frame	47.903	90.248	479,025			Total	100.00	!
Zinc 7440-96-6 Lead Frame 0.083 0.118 627 Phosphorus 7723-14-0 Lead Frame 0.041 0.076 414 Silver 7440-92-4 Die Attach 1.186 2.224 1.186 72m; 7430-96-6 0.13 Acytylate restan Phopietary 17ade Secret Die Attach 0.080 0.077 0.141 Photestory 7723-14-0 Die Attach 0.080 0.051 2.700 Photestory 7723-14-0 0.08 0.080 0.057 0.015 2.700 Photestory 7723-14-0 0.08 0.080 0.057 0.080 0.057 0.080 Photestory 7723-14-0 0.08 0.080 0.057 0.080 0.057 0.080 0.057 0.080 0.080 0.057 0.080 0.	Iron	7439-89-6	Lead Frame	1.178	2.220	11,783	94.46	(mg) Total	Lead Frame	% of Total Weight	50.14
Phosphorous 1772-140 Lead Frame 0,041 0,078 414 185	Silver	7440-22-4	Lead Frame	0.955	1.800	9,552					
Silver 7440-92-4 Die Attach 1,188 2,234 11,888 Acyteit resine Proprietary 1740-92-5 Die Attach 0,0274 0,0515 2,736 Proprietary 1770-1 0,08 Proprietary	Zinc	7440-66-6	Lead Frame	0.063	0.118	627				2.35	
Sever Not provided the series Proprietary 1 Trade Secret Dis Attach 0.274 0.315 2.736 Propositions 1 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.057 304 Propositions 2 Trade Secret Dis Attach 0.030 0.050 0.0	Phosphorous	7723-14-0	Lead Frame	0.041	0.078	414		Silver	7440-22-4	1.91	
Treated silica Trades Secret Die Attach 0.030 0.057 304 1 100 100 100 100 100 100 100 100 100	Silver	7440-22-4	Die Attach	1.186	2.234	11.856				0.13	
Heterocyclic organic compound Silicon 1740-213 Chip (De) 4.28 8.064 42.800 Gold 7740-57-5 Wire Bond 0.480 0.904 42.800 Time 1740-31-5 Pering on external basis (per) 4.0480 0.904 14.800 1740-224 78 Time 1740-31-5 Pering on external basis (per) 4.0480 0.904 14.800 1740-224 78 TOTALS: 100.000 188.400 1.000,000 Total (Management of the Control of the C											
Heterocyclic organic compound Silicon T440213 (http://doi.org.) Gold T7440273 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard seasor in 1960 (http://doi.org.) To T7440315 Presign one standard sea	Treated silica	Trade Secret	Die Attach	0.030	0.057	304			Total	100.00	J
Silicon 7440-21-3 Chip (Dile) 4.280 8.064 42.800							2.86	(mg) Total			1 52
Acyster resums Proprietary Trade Secret 19 Tin 7440-91-5 [President sides of Microchip Total Mass] O.1884 g Total Mass TOTALS: 100.000 188.400 1,000,000 TOTALS: 100.000 178.400 1,000,000							2.00				1.02
Tin T440-31-5 Pasting on external basis (pero) - Marks Tin / anvested at 190°C (or 1 for 2 3.71 0 0.090 188.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.40 1,000,000 189.											
1.1824 g Total Mass Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (ROHS Directive), EU Directive). 1.1824 g Total Mass Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (ROHS Directive), EU Directive) 2011/65/EU (ROHS Recast Directive) and with EU live 2002/95/EC (End-of-Life Vehicles (ELV) Directive). 1.1826 (End-of-Life Vehicles). 1.1826 (End-of-Life Vehicles).											
O.1884 g Total Mass O.1895 (End-of-Life Vehicles (ELV) Directive). O.1896 g Total Mass O.1897 (For Inventor of the Complete Co	1111	7440-31-3					Hoto				
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU versus 2002/95/EC (RoH-O-LI-Ne Vehicles (ELV) Directive). Islance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. Implication of the same of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the calcular substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip role of the device of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the calcular substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip role of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the calcular substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip round in the semiconductor of the calcular substance is absent from the list above, the chemical substance is not the developed of regularity concern for any regulatory scheme world-wide. In the complete of the versus of the date is stated in this form date of the properties of the versus of		0.4004		100.000	100.400	1,000,000	пеце	ocyclic organic compound		_	
lilance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon Total (mg) Chip (Die) % of Total Weight 4.28		0.1884	g Total Mass						lotal	100.00	
temical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip hology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the ical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. In go compounds used by Microchip meet the UL94 V9 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at vul.com/global/eng/pages/offerings/industries/chemicals/plastics/ In go compounds used by Microchip meet the UL94 V9 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at vul.com/global/eng/pages/offerings/industries/chemicals/plastics/ In go compounds used by Microchip meet the UL94 V9 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at vul.com/global/eng/pages/offerings/industries/chemicals/plastics/ In go compounds used by Microchip acceptance of the verage well of the verage well of the search of the verage well of the verage well of the date is discovered to the search of the verage well of the date is discovered to the search of the verage well of the verage well of the search of the verage well of t		•	trols, supplier declarations, and /or analytical test data.	•	·		8.06	1			4.28
//ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold T440-57-5 100	nology Incorporated's knowledge and belief as of th	e date of this document, th	here is no credible reason to believe that the unavoidabl					1	Total	100.00	!
Doped Gold 7440-57-5 100.00 Total 100.00 T			r plastics. You can access the UL iQTM family of databa								
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ses in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot not every find the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw ial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and laterial suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. The exclusive is estimates of not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited to travarranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided for guotations, sales order acknowledgement, and invoices. This is a section of the control of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third parties as a result of the users' r			, , , , , , , , , , , , , , , , , , , ,	ses to obtain a	test report a	t	0.90	(mg) Total	Wire Bond	% of Total Weight	0.48
uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. 6.99		hipped are made from poly			•		0.90				0.48
rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 To 7440-31-5 100.00	and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information ces in their original packing materials is true and column antee the completeness and accuracy of data in this rial suppliers. Supplier information is often protecte material suppliers. Information is provided only as e	tion in this form concernir rrect to the best of its knov form because it has been d from disclosure as trade stimates of the average we	yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technold wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been provelight of these parts and the average weight of anticipates.	ogy Incorporat ochip Technold ty Data Sheets vided by subco d significant to	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	the outer ductor ited cannot raw blers and	0.90		7440-57-5	100	0.48
	and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informa tes in their original packing materials is true and corporate the completeness and accuracy of data in this rial suppliers. Supplier information is often protecte material suppliers. Information is provided only as e e estimates do not include trace levels of dopants, rochip Technology Incorporated does not provide and uct warranties provided by Microchip Technology In	tion in this form concernir rrect to the best of its know form because it has been of from disclosure as trade stimates of the average we netals, and non-metal matury warranty, express or imp corporated and its subsidi	yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technold wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been provelight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this details	ogy Incorporat ochip Technole ty Data Sheets vided by subco d significant to finished parts claration. The	ed's semicon ogy Incorpora i provided by ntract assem oxic metals co	the outer ductor ited cannot raw blers and imponents.		Doped Gold	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100	0.48
Total 100 00	and certain "reels" may be made from PVC plastic. Inchip Technology Incorporated believes the informates in their original packing materials is true and contended the completeness and accuracy of data in this rial suppliers. Supplier information is often protecte naterial suppliers. Information is provided only as e estimates do not include trace levels of dopants, reachip Technology Incorporated does not provide any uct warranties provided by Microchip Technology Incorporated contended the contended permit with place of the contended permit with place of the contended permit which is disclaims any duty to notify users of updates of wise, suffered by users or third parties as a result of wise, suffered by users or third parties as a result of the contended permit with the contended permit which is the con	tion in this form concerning rect to the best of its known form because it has been dif rom disclosure as trade stimates of the average we netals, and non-metal matery warranty, express or improproproated and its subsidity, and invoices.	yvinyl chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technolog wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe is escrets and some information may not have been proveight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the oblied, with respect to the information provided in this deciaries are contained in Microchip's standard terms and content Declarations and shall not be liable for any damage	ogy Incorporat ochip Technolo sty Data Sheets vided by subco d significant to e finished parts claration. The conditions of s	ed's semicon ogy Incorpora provided by ntract assem oxic metals co. exclusive, lim ale. These are	ductor ited cannot raw blers and imponents. ited provided		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight	
	nd certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the informates in their original packing materials is true and contee the completeness and accuracy of data in this ial suppliers. Supplier information is often protecte laterial suppliers. Information is provided only as eximates do not include trace levels of dopants, rechip Technology Incorporated does not provide any cit warranties provided by Microchip Technology Incrochip's quotations, sales order acknowledgement chip disclaims any duty to notify users of updates ownes, suffered by users or third parties as a result o	tion in this form concerning rect to the best of its known form because it has been dif rom disclosure as trade stimates of the average we netals, and non-metal matery warranty, express or improproproated and its subsidity, and invoices.	yvinyl chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technolog wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe is escrets and some information may not have been proveight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the oblied, with respect to the information provided in this deciaries are contained in Microchip's standard terms and content Declarations and shall not be liable for any damage	ogy Incorporat ochip Technolo sty Data Sheets vided by subco d significant to e finished parts claration. The conditions of s	ed's semicon ogy Incorpora provided by ntract assem oxic metals co. exclusive, lim ale. These are	ductor ited cannot raw blers and imponents. ited provided		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight	

ML 44 QFN 7:10 PM : 8/8/2012

AICROCHIP Semiconductor Device	Type: MR 64 (Lead)	QFN 9x9x0.9mm (R4)		nation Base A pper Alloy (C	-		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			10.41	(mg) Total	Mold Compound	% ot Total Weight	4.48
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.41	, ,,			4.40
Silica, fused	60676-86-0	Mold Compound	4.032	9.370	40,320		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	0.217	0.505	2,173		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.217	0.505	2,173		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.013	0.031	134		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	40.914	95.085	409,143			Total	100.00	
Tin	7440-31-5	Lead Frame	0.105	0.244	1,050	97.61	(mg) Total	Lead Frame	% of Total Weight	42
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.076	0.176	756		Tin	7440-31-5	0.25	
Chromium	7440-47-3 7440-22-4	Lead Frame	0.105	0.244	1,050		Silver	7440-22-4	1.91	
Silver Acrylate resins Proprietary	Trade Secret	Die Attach Die Attach	1.888 0.436	4.387 1.012	18,876 4,356		Zinc Chromium	7440-66-6 7440-47-3	0.18 0.25	
-,					4,356		Chromium			
Treated silica	Trade Secret Trade Secret	Die Attach Die Attach	0.048	0.112 0.112	484 484			Total	100.00	
Heterocyclic organic compound						5.62	(mg) Total	Die Attach	% of Total Weight	2.42
Silicon Gold	7440-21-3 7440-57-5	Chip (Die)	6.000 0.970	13.944 2.254	60,000 9.700		Silver	7440-22-4	78	
		Wire Bond	44.130	102.558	9,700		Acrylate resins Proprietary Treated silica	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	232.400	1.000.000	11-4	rocyclic organic compound	Trade Secret Trade Secret	2	
			100.000	232.400	1,000,000	Hete	rocyclic organic compound	Total	100.00	
	0.2324	g Total Mass						iotai	100.00	
s semiconductor device and its homogenous material	s comply with EU Directive	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	with EU					
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU rols, supplier declarations, and /or analytical test data.	(RoHS Recast	Directive) and	d with EU	13.94	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	6
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifications.	e). ed via internal design cont	rols, supplier declarations, and /or analytical test data.	`	,	,	13.94		. , ,		6
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of). ed via internal design cont chemical substance is NC e date of this document, the regulatory concern for any	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidably regulatory scheme world-wide.	and, to the be	est of Microch	ip the	13.94		7440-21-3	100	6
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 VI	o). ched via internal design cont chemical substance is NC e date of this document, th regulatory concern for any of flammability standard for	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable	and, to the be	est of Microch	ip the	2.25		7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vol.://ul.com/global/eng/pages/offerings/industries/chem	o). ched via internal design conto chemical substance is NC e date of this document, thregulatory concern for any of diammability standard for icals/plastics/	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the be e impurity cor ses to obtain a	est of Microch centration of test report a	ip the		Doped Silicon	7440-21-3 Total	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V(x://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is stand certain "reels" may be made from PVC plastic. rocchip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this erial suppliers. Supplier information is provided only as eventerial suppliers. Information is provided only as eventerial suppliers.	chemical substance is NC ed ate of this document, the regulatory concern for any of flammability standard for icals/plastics/ nipped are made from poly tion in this form concerning rect to the best of its know form because it has been a from disclosure as trade timates of the average we	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databa	e and, to the be e impurity cor ses to obtain a to hold the pa ogy Incorporat schip Technol- ty Data Sheets ided by subco d significant to	est of Microch icentration of itest report a cking slip on ed's semicon ogy Incorpora provided by ntract assem wice metals cc	the outer ductor tted cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V(:://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is st and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this erial suppliers. Supplier information is often protecte material suppliers. Information is provided only as esse estimates do not include trace levels of dopants, norochip Technology Incorporated does not provide any	chemical substance is NC ed ate of this document, the regulatory concern for any of flammability standard for icals/plastics/ nipped are made from poly tion in this form concerning rect to the best of its know form because it has been defrom disclosure as trade to the test of the average we netals, and non-metal matery warranty, express or imp corporated and its subsidi	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devictere is no credible reason to believe that the unavoidable of regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used ag substances restricted by RoHS in Microchip Technologiege and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been provigint of these parts and the average weight of anticipater	e and, to the be e impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol- ty Data Sheets ided by subco d significant to finished parts claration. The	est of Microck icentration of itest report a cking slip on ed's semicon ogy Incorpora provided by intract assem exic metals co	the outer ductor sted cannot raw blers and imponents.		Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vt.://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this erial suppliers. Supplier information is often protecte material suppliers. Information is provided only as ese estimates do not include trace levels of dopants, norochip Technology Incorporated does not provide and duct warranties provided by Microchip Technology In licrochip's quotations, sales order acknowledgement, rochip disclaims any duty to notify users of updates or	chemical substance is NC e date of this document, the regulatory concern for any of flammability standard for icals/plastics/ hipped are made from poly tion in this form concerning rect to the best of its known form because it has been of from disclosure as trade stimates of the average we netals, and non-metal mater of warranty, express or impropriet and invoices.	rols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable of regulatory scheme world-wide. It plastics. You can access the UL IQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technologies and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been provight of these parts and the average weight of anticipateerials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this detiled, with respect to the information provided in this detiled, with respect to the information provided in this detiled.	e and, to the be e impurity cor- ses to obtain a to hold the pa pgy Incorporat pochip Technol, ty Data Sheets ided by subco d significant to finished parts claration. The onditions of s s, direct or inc	est of Microck icentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem exic metals co- exclusive, lim ale. These are	the outer ductor ted cannot raw blers and imponents. ited	2.25	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.97

MR 64 QFN 7:10 PM : 8/8/2012

MICROCHIP Semiconductor Device	Type: MJ 24 (Lead)	QFN 4x4mm (J3)		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			21.53	(mg) Total	Mold Compound	% ot Total Weight	48.78
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	21.00	, ,,	· ·		10.1.0
Silica, fused	60676-86-0	Mold Compound	43.902	19.374	439,020	_	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	2.366 2.366	1.044 1.044	23,658 23,658	Epox	y Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret Trade Secret	4.85 4.85	
Carbon Black	1333-86-4	Mold Compound	0.146	0.065	1,463		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.193	16.413	371.930	Į.	Carbon black	Total	100.00]
Tin	7440-31-5	Lead Frame	0.095	0.042	955	16.85	(mg) Total	Lead Frame	% of Total Weight	38.18
Silver	7440-22-4	Lead Frame	0.727	0.321	7.273	10.03	Copper	7440-50-8	97.42	30.10
Zinc	7440-66-6	Lead Frame	0.069	0.030	687		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.095	0.042	955		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.967	0.427	9,672		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.223	0.098	2,232		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.025	0.011	248			Total	100.00	U
Heterocyclic organic compound	Trade Secret	Die Attach	0.025	0.011	248	0.55	(mg) Total	Die Attach	% of Total Weight	1.24
Silicon	7440-21-3	Chip (Die)	6.770	2.988	67,700		Silver	7440-22-4	78	1
Gold	7440-57-5	Wire Bond	0.750	0.331	7,500		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	1.889	42,800		Treated silica	Trade Secret	2	
		TOTALS:	100.000	44.130	1,000,000	Heter	rocyclic organic compound	Trade Secret	2	
										3
his semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive	, , ,	(RoHS Recast	Directive) and	d with EU	2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
	comply with EU Directive via internal design contribution hemical substance is NO date of this document, the	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	nip	2.99	Total (mg)			6.77
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the contrology Incorporated's knowledge and belief as of the elemical substance, if any, is not below the threshold of repolding compounds used by Microchip meet the UL94 VO for	via internal design control wis internal design control hemical substance is NO date of this document, the gulatory concern for any	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab regulatory scheme world-wide.	e and, to the b	est of Microch	ip the	2.99	Total (mg)	Chip (Die) 7440-21-3	% of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Description with the above EU Directives has been verified a chemical substance is absent from the list above, the contrology Incorporated's knowledge and belief as of the	via internal design control hemical substance is NO date of this document, the gulatory concern for any lammability standard for als/plastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databa	e and, to the bele impurity con	est of Microch ncentration of a test report a	nip the			Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the content of t	via internal design control wia internal design control hemical substance is NO date of this document, th gulatory concern for any lammability standard for als/plastics/ oped are made from poly on in this form concernin ct to the best of its know orm because it has been of from disclosure as trade mates of the average we	22002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databa vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol ledge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Saf secrets and some information may not have been proy ght of these parts and the average weight of anticipate	e and, to the belle impurity consists to obtain a let to hold the particular to the	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpore s provided by nutract assem oxic metals cc	t t the outer ductor ated cannot raw blers and		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cochnology Incorporated's knowledge and belief as of the nemical substance, if any, is not below the threshold of resolding compounds used by Microchip meet the UL94 V0 ftp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is ship to and certain "reels" may be made from PVC plastic. Incrochip Technology Incorporated believes the informatic evices in their original packing materials is true and correlarantee the completeness and accuracy of data in this foaterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as esti	via internal design control wia internal design control hemical substance is NO date of this document, the gulatory concern for any lammability standard for als/plastics/ oped are made from poly on in this form concernin cut to the best of its know orm because it has been of from disclosure as trade mates of the average we tals, and non-metal mate varranty, express or impl proporated and its subsidi-	22002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databatics. You can access the UL iQTM family of databaticylorylorylorylorylorylorylorylorylorylor	e and, to the belle impurity considerable to obtain a left to hold the part ochip Technol ety Data Sheets vided by subcoded significant to efinished parts eclaration. The	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals cos.	tt tthe outer ductor ated cannot raw blers and omponents.		(mg) Total JGPSSI (D02) (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cechnology Incorporated's knowledge and belief as of the elemical substance, if any, is not below the threshold of resolding compounds used by Microchip meet the UL94 V0 ftp://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship ox and certain "reels" may be made from PVC plastic. Incrochip Technology Incorporated believes the informatic elevices in their original packing materials is true and correctivation and their original packing materials is true and correctivation and their original packing materials is true and correctivation and their original packing materials is true and correctivation and their original packing materials is often protected with material suppliers. Information is provided only as estimates do not include trace levels of dopants, memorrochip Technology Incorporated does not provide any wooduct warranties provided by Microchip Technology Incorporated believes.	via internal design control wia internal design control hemical substance is NO date of this document, th gulatory concern for any lammability standard for als/plastics/ opped are made from poly on in this form concernin tect to the best of its know orm because it has been of from disclosure as trade imates of the average we tals, and non-metal mate varranty, express or impl orporated and its subsidi- nd invoices. changes to Material Cont- he users' reliance on the	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databavinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol ledge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safe secrets and some information may not have been proght of these parts and the average weight of anticipate rials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dearies are contained in Microchip's standard terms and the other contained in Microchip's standard terms and the other contained in Microchip's standard terms and the contained in the contained in Microchip's standard terms and the contained i	ee and, to the belle impurity consists to obtain a to hold the particular to hold the hold the particular to hold the hol	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem over metals co s. exclusive, lim sale. These are	t the outer adductor raw blers and omponents.	0.33	(mg) Total JGPSSI (D02) (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.75

MJ 24 QFN 7:10 PM : 8/8/2012

Semiconductor Device	ce Type: QU6E 06 (Lead) UQI	-N 3x1.6x0.55mm (QU)		nation Base A				ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In" Sub-Component	% Total Weight			1.36	(mg) Total	Mold Compound	% ot Total Weight	20.25
Basic Substance	CAS Number			mg/part	ppm		Oilles forest	00070 00 0	00.00	7
Silica, fused Epoxy Resin	60676-86-0 Trade Secret	Mold Compound Mold Compound	18.225 0.982	1.221 0.066	182,250 9,821		Silica, fused Epoxy Resin	60676-86-0 Trade Secret	90.00 4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.982	0.066	9,821		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.061	0.004	608		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	69.935	4.686	699,355		Carbon black	Total	100.00	J
Nickel	7440-02-0	Lead Frame	1.865	0.125	18,651	4.92	(mg) Total	Lead Frame	% of Total Weight	73.43
Silicon	7440-21-3	Lead Frame	0.330	0.022	3.304	4.92	Copper	7440-50-8	95.24	73.43
Magnesium	7439-95-4	Lead Frame	0.073	0.005	734		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	1.226	0.082	12,255		Silicon	7440-21-3	0.45	
Aa	7440-22-4	Die Attach	1.710	0.115	17,100		Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.342	0.023	3,420		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.008	1,140		Ciivoi	Total	100.00	l
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057	0.004	570	0.15	(mg) Total	Die Attach	% of Total Weight	2.28
Polymeric material	Trade secret	Die Attach	0.057	0.004	570	0.13	Aq Aq	7440-22-4	75.00	2.20
Silicon	1303-00-0	Chip (Die)	2.120	0.142	21,200		Epoxy resin	Trade secret	15.00	
Doped Gold	7440-57-5	Wire Bond	0.540	0.036	5.400		Aliphatic anhydride	Trade secret	5.00	
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.380	0.092	13.800		2-Butoxyethyl acetate	112-07-2	2.50	
1111	7440-31-3 Flating 0	TOTALS:		6.700	1,000,000		Polymeric material	Trade secret	3	
	0.0067 g Tota		100.000	0.700	1,000,000		Folyment material	Total	100.00]
		5/EC (RoHS Directive), EU Directive 2011/65/EU ((RoHS Recast	t Directive) a	nd with EU	0.14	(mg) Total			2.12
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).	, ,	(RoHS Recast	t Directive) a	nd with EU	0.14	(mg) Total GaAs	Chip (Die) 1303-00-0	% of Total Weight	2.12
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifi emical substance is absent from the list above, the lology Incorporated's knowledge and belief as of the	e). ed via internal design controls, sup e chemical substance is NOT an inte le date of this document, there is no	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable	and, to the b	est of Microc	chip	0.14	1	Chip (Die)	% of Total Weight	2.12
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifi emical substance is absent from the list above, the ology Incorporated's knowledge and belief as of the cal substance, if any, is not below the threshold of g compounds used by Microchip meet the UL94 V	e). ed via internal design controls, sup e chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulate 0 flammability standard for plastics	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable ory scheme world-wide.	and, to the be	est of Microo ncentration o	chip of the	0.14	1	Chip (Die) 1303-00-0	% of Total Weight	0.54
semiconductor device and its homogenous materia titve 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifi hemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ing compounds used by Microchip meet the UL94 V //ul.com/global/eng/pages/offerings/industries/chemorotective "tubes" in which the specific product is sand certain "reels" may be made from PVC plastic.	ed via internal design controls, sup e chemical substance is NOT an inte le date of this document, there is no regulatory concern for any regulate 0 flammability standard for plastics ilcals/plastics/	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable ory scheme world-wide. . You can access the UL iQTM family of databas	e and, to the be e impurity co	est of Microconcentration of a test report	chip of the		GaAs	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifinemical substance is absent from the list above, the nology incorporated's knowledge and belief as of the icial substance, if any, is not below the threshold of mg compounds used by Microchip meet the UL94 V/ul.com/global/eng/pages/offerings/industries/chemorotective "tubes" in which the specific product is sound certain "reels" may be made from PVC plastic. Inchip Technology Incorporated believes the informate in their original packing materials is true and coot guarantee the completeness and accuracy of data naterial suppliers. Supplier information is often pro aw material suppliers. Information is provided only	ed via internal design controls, sup e chemical substance is NOT an inte le date of this document, there is no regulatory concern for any regulato 0 flammability standard for plastics licals/plastics/ hipped are made from polyvinyl chi tition in this form concerning substate rrect to the best of its knowledge are a in this form because it has been cleeted from disclosure as trade sec as estimates of the average weight	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device oredible reason to believe that the unavoidable ory scheme world-wide. b. You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technolo id belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Materi rets and some information may not have been p of these parts and the average weight of anticip	e and, to the be impurity consess to obtain to hold the particular and	nest of Microconcentration of a test report acking slip of ted's semicology Incorpo a Sheets pro ubcontract a ant toxic met	chip of the at n the outer anductor rated vided by scamblers als		GaAs (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifinemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ling compounds used by Microchip meet the UL94 V/ul.com/global/eng/pages/offerings/industries/chemorotective "tubes" in which the specific product is s	ed via internal design controls, sup e chemical substance is NOT an inte le date of this document, there is not regulatory concern for any regulate of flammability standard for plastics sicals/plastics/ hipped are made from polyvinyl chi tition in this form concerning substate rect to the best of its knowledge are a in this form because it has been ce tected from disclosure as trade sec as estimates of the average weight is of dopants, metals, and non-metal by warranty, express or implied, with corporated and its subsidiaries are	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable orry scheme world-wide. You can access the UL iQTM family of databas oride (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technolo id belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Materi rets and some information may not have been po of these parts and the average weight of anticip if materials contained within silicon devices (silical a respect to the information provided in this dec	e and, to the be impurity conses to obtain to hold the particular and	nest of Microconcentration of a test report acking slip of ted's semicology Incorpo a Sheets pro ubcontract a ant toxic met finished par exclusive, lii	chip of the at In the outer anductor rated vided by ssemblers tals rts. mited		GaAs (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive blance with the above EU Directives has been verification with the above EU Directives has been verification with the above EU Directives has been verification with the second properties of the ical substance, if any, is not below the threshold of mag compounds used by Microchip meet the UL94 Vull.com/global/eng/pages/offerings/industries/chemicrotective "tubes" in which the specific product is some order that the second certain "reels" may be made from PVC plastic. The provided in the properties of the properties of the provided in the provided only one that the second control of the provided only one that the second control of the provided only one that the provided by Microchip Technology Incorporated does not provide an unit to the provided by Microchip Technology Incorporated the provided and the provided by Microchip Technology Incorporated does not provided and the provided by Microchip Technology Incorporated does not provided and the provided by Microchip Technology Incorporated does not provided and the provided an	ed via internal design controls, super chemical substance is NOT an internal design controls, super chemical substance is NOT an internal design controls, super chemical substance is NOT an internal design and invoices.	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device oredible reason to believe that the unavoidable ory scheme world-wide. E. You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Materi rets and some information may not have been p of these parts and the average weight of anticip in materials contained within silicon devices (silic orespect to the information provided in this dec contained in Microchip's standard terms and co- arations and shall not be liable for any damage:	e and, to the be impurity conses to obtain to hold the particular and the parti	nest of Microconcentration of a test report acking slip of ted's semico logy Incorpo a Sheets pro ubcontract a ant toxic met finished par exclusive, li sale. These a direct, conse	chip of the at In the outer Inductor rated vided by ssemblers tals tals tals tre equential or	0.04	(mg) Total Doped Gold	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.54

QU6E 06-UQFN 7:10 PM : 8/8/2012

MICROCHIP				nation Base pper Alloy (0	•		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	eType: QUBE 12 (L	ead) UQFN 2x2x0.55mm (QM)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1.74	(mg) Total	Mold Compound	% ot Total Weight	34.08
Silica, fused	60676-86-0	Mold Compound	30.672	1.564	306.720		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.653	0.084	16,529	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.084	16,529		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.102	0.005	1.022		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	43,363	2.212	433.632			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.156	0.059	11.565	2.32	(mg) Total	Lead Frame	% of Total Weight	45.53
Silicon	7440-21-3	Lead Frame	0.205	0.010	2.049	2.02	Copper	7440-50-8	95.24	10.00
Magnesium	7439-95-4	Lead Frame	0.046	0.002	455		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.760	0.039	7,599		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	2.256	0.115	22.560		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.564	0.029	5.640		Silver	7440-22-4	1.67	
GaAs	1303-00-0	Chip (Die)	14.370	0.733	143,700		Silvei	Total	100.00	ļ
Doped Gold	7440-57-5	Wire Bond	1.060	0.054	10,600	0.14	(mg) Total	Die Attach	% of Total Weight	2.82
Tin	7440-31-5		2.140	0.109	21,400	0.14	Silver	7440-22-4	80.00	2.02
IIII	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000							
			100.000	5.100	1,000,000		Epoxy Resin	Trade secret	20.00	J
	0.0051	g Total Mass						Total	100.00	
his saminandustar davias and its hamasansus materials	aamalu with EU Directive 2	2002/05/EC (Dalle Directive) Ell Directive 2014/65/EU (Dal	UC Decest Di	reetive) and	vith EII					
his semiconductor device and its homogenous materials (irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			HS Recast Di	rective) and	with EU	0.73	(mg) Total	Chip (Die)	% of Total Weight	14.37
			HS Recast Di	rective) and	with EU	0.73	(mg) Total GaAs	1303-00-0	100	14.37
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the clechnology Incorporated's knowledge and belief as of the dubstance, if any, is not below the threshold of regulatory c	via internal design control nemical substance is NOT date of this document, ther concern for any regulatory	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and e is no credible reason to believe that the unavoidable imscheme world-wide.	d, to the bes purity conce	t of Microchip entration of th		0.73		,		14.37
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the dubstance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 flttp://ul.com/global/eng/pages/offerings/industries/chemica	via internal design control nemical substance is NOT : late of this document, ther concern for any regulatory : lammability standard for pl als/plastics/	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and e is no credible reason to believe that the unavoidable imscheme world-wide. lastics. You can access the UL iQTM family of databases	d, to the bes purity conce to obtain a te	of Microchipentration of the	ne chemical	0.73		1303-00-0	100	14.37
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the dubstance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 fl	via internal design control nemical substance is NOT : late of this document, ther concern for any regulatory : lammability standard for pl als/plastics/	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and e is no credible reason to believe that the unavoidable imscheme world-wide. lastics. You can access the UL iQTM family of databases	d, to the bes purity conce to obtain a te	of Microchipentration of the	ne chemical		GaAs	1303-00-0 Total	100	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the cubstance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 fltp://ul.com/global/eng/pages/offerings/industries/chemicathe protective "tubes" in which the specific product is ship	via internal design control nemical substance is NOT late of this document, there concern for any regulatory lammability standard for pl als/plastics/ uped are made from polyvir in in this form concerning ct to the best of its knowled rm because it has been co- closure as trade secrets co-	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and is no credible reason to believe that the unavoidable imscheme world-wide. lastics. You can access the UL iQTM family of databases anyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microchimpiled based on the ranges provided in Material Safety D d some information may not have been provided by subcirts and the average weight of anticipated significant toxic	d, to the besingurity concerts obtain a to obtain a to old the pack incorporated p Technologiata Sheets prontract assect metals com	t of Microchip entration of the est report at ing slip on the 's semicondi y Incorporate rovided by moblers and r	ne chemical ne outer box uctor nd cannot w material aw material		GaAs (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the cubstance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 fittp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. iicrochip Technology Incorporated believes the informatio evices in their original packing materials is true and correcularantee the completeness and accuracy of data in this for uppliers. Supplier information is often protected from discuppliers. Information is provided only as estimates of the	via internal design control nemical substance is NOT date of this document, there concern for any regulatory of lammability standard for pl als/plastics/ uped are made from polyvir in in this form concerning of to to the best of its knowled rim because it has been co- closure as trade secrets an average weight of these and non-metal materials con varranty, express or implied and its subsidiaries are co	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and is no credible reason to believe that the unavoidable imscheme world-wide. Iastics. You can access the UL iQTM family of databases only chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microchip mpiled based on the ranges provided in Material Safety D d some information may not have been provided by substance within silicon devices (silicon IC) in the finished p d, with respect to the information provided in this declaration.	d, to the besipurity concerts obtain a test obtain a test old the pack Incorporated p Technologista Sheets prontract assec metals comarts.	est report at ing slip on the 's semicondi y Incorporate rovided by ra mblers and ra ponents. The	ne chemical ne outer box uctor nd cannot w material aw material ese		GaAs (mg) Total Doped Gold (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	1.06

5.100 100.000

QUBE 12 X2QFN 7:10 PM : 8/8/2012

MICROCHIP				ination Base opper Alloy				mogeneous Materials: (e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: Q3DE 20 (Lead) UQFN 3x3x0.55mm (QD)								e3
Paria Cultataman	CAS Number	"Contained In" Sub-Component	% Total Weight			10.59	(mg) Total	Mold Compound	% ot Total Weight	51.57
Basic Substance Silica, fused	60676-86-0	Mold Compound	46.413	mg/part 9.529	ppm 464.130		Silica, fused	60676-86-0	90.00	-
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.501	0.513	25.011		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.501	0.513	25.011		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.032	1.547		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.916	8.195	399,155		Carbon Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	1.065	0.219	10,645	8.60	(mg) Total	Lead Frame	% of Total Weight	41.91
Silver	7440-22-4	Lead Frame	0.699	0.144	6.995	0.00	Copper	7440-50-8	95.24	41.31
Silicon	7440-21-3	Lead Frame	0.099	0.039	1.886		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.169	0.039	419		Silver	7440-02-0	1.67	
Silver	7439-95-4	Die Attach	0.656	0.009	6,560		Silver	7440-22-4	0.45	
Epoxy Resin	Trade secret	Die Attach	0.000	0.135	1,640		Magnesium	7439-95-4	0.45	
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21.800		Magnesium	7459-95-4 Total		
Doped Gold	7440-57-5	Wire Bond	0.530	0.109	5,300	0.17	(mg) Total	Die Attach	% of Total Weight	
Tin			2.990	0.614	29.900	0.17	Silver	7440-22-4	80.00	0.02
IIII	7440-31-5 PK	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	20.530	1.000.000		Epoxy Resin	Trade secret	20.00	
			100.000	20.530	1,000,000		Epoxy Resili			
	0.02053 g							Total	100.00	
is semiconductor device and its homogenous materials of	omply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	t Directive) a	nd with EU					
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, , , , , , , , , , , , , , , , , , , ,		•		0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
mpliance with the above EU Directives has been verified		supplier declarations, and /or analytical test data.				0.45	(mg) Total Doped Silicon	7440-21-3	% of Total Weight 100 100.00	2.18
mpliance with the above EU Directives has been verified on the list above, the chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of recommendations.	emical substance is NOT and ate of this document, there pulatory concern for any reg	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide.	and, to the k	pest of Microoncentration o	chip of the	0.45		7440-21-3	100	2.18
mpliance with the above EU Directives has been verified on chemical substance is absent from the list above, the check chnology incorporated's knowledge and belief as of the d	emical substance is NOT are ate of this document, there gulatory concern for any regammability standard for pla	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide.	and, to the k	pest of Microoncentration o	chip of the	0.45		7440-21-3	100	
mpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the checknology incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 VO fla	emical substance is NOT at ate of this document, there pulatory concern for any reg ammability standard for pla ls/plastics/	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide. Stics. You can access the UL iQTM family of database.	and, to the temperature impurity co	pest of Microconcentration of a test report	chip of the at		Doped Silicon	7440-21-3 Total	100	
mpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the chechnology incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 fl.p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is ship x and certain "reels" may be made from PVC plastic.	emical substance is NOT at ate of this document, there julatory concern for any reg ammability standard for pla is/plastics/ ped are made from polyviny	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide. Stics. You can access the UL iQTM family of databas.	and, to the to impurity co	pest of Microconcentration of a test report	chip of the at n the outer		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified and chemical substance is absent from the list above, the checknology incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 fl.p://ul.com/global/eng/pages/offerings/industries/chemical	emical substance is NOT at ate of this document, there julatory concern for any reg ammability standard for pla is/plastics/ ped are made from polyving in in this form concerning su at to the best of its knowled, im because it has been com losure as trade secrets and s of the average weight of the	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide. Stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologie and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safet some information may not have been provided by subsess parts and the average weight of anticipated sign	and, to the best impurity consess to obtain to hold the page Incorporation of the page Incorpora	a test report acking slip o ated's semice logy Incorpo is provided b issemblers ar	chip of the at n the outer enductor rated cannot y raw material td raw	0.11	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 flp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship at and certain "reels" may be made from PVC plastic. Corochip Technology Incorporated believes the information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for poliers. Supplier information is often protected from discuterial suppliers. Information is provided only as estimate	emical substance is NOT at ate of this document, there julatory concern for any reg ammability standard for pla is/plastics/ ped are made from polyviny in in this form concerning start to the best of its knowled im because it has been com losure as trade secrets and so of the average weight of the als, and non-metal material arranty, express or implied, and its subsidiaries are cor	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide. Stics. You can access the UL iQTM family of database of the local control of the local contr	and, to the best impurity consess to obtain to hold the part of th	a test report acking slip o ated's semicology Incorpo is provided b is semblers are metals compise.	chip of the at n the outer enductor rated cannot y raw material dd raw ponents. mited product	0.11	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.53
mpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the chechnology incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regular incompounds used by Microchip meet the UL94 V0 fl. p://ul.com/global/eng/pages/offerings/industries/chemical eprotective "tubes" in which the specific product is ship x and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for oppliers. Supplier information is often protected from discretarial suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, met crochip Technology Incorporated does not provide any w rranties provided by Microchip Technology Incorporated	emical substance is NOT at ate of this document, there pulatory concern for any regammability standard for plats/plastics/ ped are made from polyviny in in this form concerning state to the best of its knowled in because it has been composure as trade secrets and so f the average weight of the average weight of the arranty, express or implied, and its subsidiaries are continuous. The property of the average weight	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable julatory scheme world-wide. Stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologie and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safety some information may not have been provided by such seep parts and the average weight of anticipated signs contained within silicon devices (silicon IC) in the few with respect to the information provided in this declatained in Microchip's standard terms and conditions. Declarations and shall not be liable for any damages.	and, to the best impurity consess to obtain to hold the pagy Incorporating Techno y Data Sheet ubcontract a mificant toxic finished part laration. The sof sale. The sof sale.	a test report acking slip o ated's semice logy Incorpo is provided b issemblers ar metals complis. e exclusive, li ese are provide	chip of the at In the outer onductor rated cannot y raw material nd raw ponents. mited product ded in	0.11	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00	0.53

Q3DE 20 UQFN 7:11 PM : 8/8/2012

MICROCHIP Semiconductor Devi	ce Type: QUCE 16 (Lead) UC	DFN/XDFN 3x3x0 45mm (OB)		nation Base /				ogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	nnm	10.61	(mg) Total	Mold Compound	% ot Total Weight	t 51.99
Silica, fused	60676-86-0	Mold Compound	46,791	9.545	ppm 467.910		Silica, fused	60676-86-0	90.00	T
Epoxy Resin	Trade Secret	Mold Compound	2,522	0.514	25,215		Epoxy Resin	Trade Secret	4.85	-
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Phenolic Resin	Trade Secret	4.85	1
Carbon Black	1333-86-4	Mold Compound	0.156	0.032	1,560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39,630	8.084	396,298			Total	100.00	≝)
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569	8.49	(mg) Total	Lead Frame	% of Total Weight	t 41.61
Silicon	7440-21-3	Lead Frame	0.187	0.038	1.872		Copper	7440-50-8	95.24	1
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.632	0.129	6,320		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580		Silver	7440-22-4	1.67]
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700		•	Total	100.00	-
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900	0.16	(mg) Total	Die Attach	% of Total Weight	t 0.79
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	0.602	29,500		Silver	7440-22-4	80.00	
		TOTALS:	100.000	20.400	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0204 g Tot	al Mass						Total	100.00)
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)).	EC (RoHS Directive), EU Directive 2011/65/EU (Ro	ns Recast D	irective) and v	With EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	t 2.17
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) Compliance with the above EU Directives has been verifie of a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of i	ed via internal design controls, support chemical substance is NOT an intered adate of this document, there is no	olier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in	d, to the bes	t of Microchip	-	0.44	(mg) Total Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight	
Compliance with the above EU Directives has been verifie f a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the	d via internal design controls, supp chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulato of lammability standard for plastics.	olier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide.	d, to the bes	t of Microchip entration of th	-	0.44		1303-00-0	100	
Compliance with the above EU Directives has been verifie f a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of I	d via internal design controls, supp chemical substance is NOT an inter e date of this document, there is no regulatory concern for any regulato of flammability standard for plastics. icals/plastics/	olier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases	d, to the bes npurity conce to obtain a te	t of Microchip entration of the	e •		Gallium arsenide	1303-00-0 Total	100	
Compliance with the above EU Directives has been verified for a chemical substance is absent from the list above, the Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of a Molding compounds used by Microchip meet the UL94 VO http://ul.com/global/eng/pages/offerings/industries/chemil The protective "tubes" in which the specific product is shoox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informative devices in their original packing materials is true and corpurarantee the completeness and accuracy of data in this fluority suppliers. Supplier information is often protected from dimaterial suppliers. Information is provided only as estimater these estimates do not include trace levels of dopants, mountained to the completeness and accuracy of the completeness and accuracy of data in this fluority is suppliers. Information is provided only as estimater these estimates do not include trace levels of dopants, mountained to the complete suppliers. William These estimates do not include trace levels of dopants, mountained to the complete suppliers. William These estimates do not include trace levels of dopants, mountained to the complete suppliers. William These estimates do not include trace levels of dopants, mountained to the complete suppliers. William These estimates do not include trace levels of dopants, mountained to the complete suppliers.	d via internal design controls, support of a via internal design controls, support chemical substance is NOT an interest adate of this document, there is no regulatory concern for any regulato of flammability standard for plastics. In interest of the search of the sea	olier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases bride (PVC) plastic. "Window envelopes" used to have sestimated by RoHS in Microchip Technology delief, as of the date listed in this form. Microchibased on the ranges provided in Material Safety Experience in the average weight of anticipated significants and the average weight of anticipated significatined within silicon devices (silicon IC) in the finite respect to the information provided in this declarated in Microchip's standard terms and conditions of the contractions and shall not be liable for any damages, of the credible of the conditions and shall not be liable for any damages, of the credible of the conditions of the conditions and shall not be liable for any damages, of the credible of the conditions of the credible of the conditions of the credible of the conditions of the credible of the cr	d, to the bes npurity conce to obtain a te nold the pack Incorporated p Technolog Data Sheets p contract asse cant toxic m ished parts. ation. The ex f sale. These	t of Microchip entration of the est report at ting slip on the d's semicondi y Incorporate provided by ramblers and retals componiclusive, limite are provided	e outer uctor d cannot w material aw ents. ed product in	0.10	Gallium arsenide (mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100.00	t 0.49
Compliance with the above EU Directives has been verified for a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of a Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemi The protective "tubes" in which the specific product is shoox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informatievices in their original packing materials is true and corrigurantee the completeness and accuracy of data in this functional suppliers. Supplier information is often protected from dimaterial suppliers. Information is provided only as estimaterial suppliers information is provided only as estimaterial suppliers. Information is provided only as estimaterial suppliers information is provided only as estimaterial suppliers. Information is provided only as estimaterial suppliers information is provided only as estimaterial suppliers. Information is provided only as estimates on not include trace levels of dopants, much provided by Microchip Technology Incorporate Microchip's quotations, sales order acknowledgement, and the provided only as extending the provided only as a school of the provided by Microchip Technology Incorporate Microchip's quotations, sales order acknowledgement, and the provided only as a school of the provi	d via internal design controls, support of the via the value of valu	olier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases bride (PVC) plastic. "Window envelopes" used to have sestimated by RoHS in Microchip Technology delief, as of the date listed in this form. Microchibased on the ranges provided in Material Safety Experience in the average weight of anticipated significants and the average weight of anticipated significatined within silicon devices (silicon IC) in the finite respect to the information provided in this declarated in Microchip's standard terms and conditions of the contractions and shall not be liable for any damages, of the credible of the conditions and shall not be liable for any damages, of the credible of the conditions of the conditions and shall not be liable for any damages, of the credible of the conditions of the credible of the conditions of the credible of the conditions of the credible of the cr	d, to the bes npurity conce to obtain a te nold the pack Incorporated p Technolog Data Sheets p contract asse cant toxic m ished parts. ation. The ex f sale. These	t of Microchip entration of the est report at ting slip on the d's semicondi y Incorporate provided by ramblers and retals componiclusive, limite are provided	e outer uctor d cannot w material aw ents. ed product in		Gallium arsenide (mg) Total	Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100.00	t 0.49

QUCE 16 UQFN_XDFN 7:11 PM : 8/8/2012

100.000

20.400

MICROCHIP				nation Base A	. ,			nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: MV 28 (Lead) UQ	FN 4x4x0.5mm (R6)								63
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	11.99	(mg) Total	Mold Compound	% ot Total Weight	45.93
Silica, fused	60676-86-0	Mold Compound	41.337	10.789	413,370		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22,276	Epoxy	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.138	0.036	1,378		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	34.095	8.899	340,953			Total	100.00	•
Tin	7440-31-5	Lead Frame	0.088	0.023	875	9.14	(mg) Total	Lead Frame	% of Total Weight	35
Silver	7440-22-4	Lead Frame	0.667	0.174	6.668		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.063	0.016	630		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.088	0.023	875		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.123	0.293	11.232		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.068	2,592		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.029	0.008	288			Total	100.00	<u> </u>
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	0.38	(mg) Total	Die Attach	% of Total Weight	1.44
Silicon	7440-21-3	Chip (Die)	8.700	2.271	87.000	0.30		7440-22-4		1.44
Gold	7440-21-3	Wire Bond	0.510	0.133	5,100		Silver Acrylate resins Proprietary	Trade Secret	78 18	
Tin			8.420	2.198	84.200	•	Treated silica	Trade Secret	2	
lin	7440-31-5 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	8.420 100.000	2.198 26.100	1.000.000	Hotor	ocyclic organic compound		2	
			100.000	20.100	1,000,000	пецен	ocyclic organic compound			1
	0.0261 g To	tal Mass						Total	100.00	
This semiconductor device and its homogenous materials on 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (RoHS								
, , , ,	via internal design controls supr	lier declarations, and for analytical test data	recoust bires	uvej and with	EU DIrective	2.27	Total (mg)	Chip (Die)	% of Total Weight	8.7
Compliance with the above EU Directives has been verified	via internal design controls, supp	lier declarations, and /or analytical test data.	reduct bires	uvej and with	EU Directive	2.27	Total (mg) Doped Silicon	7440-21-3	100	8.7
, , , ,	emical substance is NOT an inten ocument, there is no credible reas	tional ingredient in the semiconductor device and,	to the best of I	, Microchip Tec	hnology	2.27				8.7
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the charcorporated's knowledge and belief as of the date of this do	emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics.	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent	to the best of l ration of the c	Microchip Tec	hnology	0.13		7440-21-3	100	
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chancorporated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any regulatory concern for any regulatory compounds used by Microchip meet the UL94 VO fla	emical substance is NOT an inter cument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. is/plastics/	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to	to the best of l tration of the c	Microchip Tec chemical subst	hnology tance, if any,		Doped Silicon	7440-21-3 Total	100	
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chancorporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any regulatory concerns for any	emical substance is NOT an inter cument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to holder restricted by RoHS in Microchip Technology In	to the best of I ration of the c obtain a test Id the packing corporated's s	Microchip Tec chemical subsi report at slip on the ou semiconductor	hnology tance, if any, ater box and r devices in		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chincorporated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any region with the specific productive with the first productive with the protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the information	emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. (s/plastics/ bed are made from polyvinyl chlo in in this form concerning substar at of its knowledge and belief, as as been compiled based on the rates and some information may no arts and the average weight of an	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hold the service of the data listed in this form. Microchip Technology In of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provite thave been provided by subcontract assemblers articipated significant toxic metals components. Thes	to the best of I ration of the o obtain a test id the packing corporated's s / Incorporated ded by raw ma id raw materia	Microchip Tec chemical subsi report at slip on the ou semiconductor I cannot guara aterial suppliers. In	hnology tance, if any, ater box and r devices in intee the rs. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chemicorporated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any regulatory concern for any regulatory. The protective "tubes" in which the specific product is shipperatain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information their original packing materials is true and correct to the besompleteness and accuracy of data in this form because it hinformation is often protected from disclosure as trade secretorovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided only as estimates of the average weight of these porovided.	emical substance is NOT an inter comment, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. is/plastics/ ped are made from polyvinyl chlor in in this form concerning substar at of its knowledge and belief, as as been compiled based on the rates and some information may no arts and the average weight of an isilicon devices (silicon IC) in the arranty, express or implied, with	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hold the sestimate of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provist have been provided by subcontract assemblers an iticipated significant toxic metals components. Thes finished parts.	to the best of I ration of the control of the contr	Microchip Tec chemical subsi report at slip on the ou semiconductoi I cannot guara aterial suppliers. In o not include t	hnology tance, if any, ater box and or devices in intee the rs. Supplier formation is race levels of		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.51
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chincorporated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any region of the lower of the l	emical substance is NOT an inter- comment, there is no credible reas- ulatory scheme world-wide. ammability standard for plastics. s/plastics/ bed are made from polyvinyl chlo in in this form concerning substant of its knowledge and belief, as as been compiled based on the re- test and some information may no arts and the average weight of an aillicon devices (silicon IC) in the arranty, express or implied, with and its subsidiaries are containe	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hold the series of the date listed in this form. Microchip Technology In of the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in the second in this declaration in the declaration in Microchip's standard terms and conditions of surrations and shall not be liable for any damages, directions and shall not be liable for any damages, directions of the date of	to the best of I ration of the control of the contr	Microchip Tec chemical subsi report at slip on the ou semiconductor I cannot guara aterial suppliers. In o not include t sive, limited pi provided in M	hnology tance, if any, ater box and r devices in intee the rs. Supplier formation is race levels of roduct licrochip's	0.13	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	0.51
Compliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the chemicorporated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any regulatory concern for any regulatory. Molding compounds used by Microchip meet the UL94 V0 flattp://ul.com/global/eng/pages/offerings/industries/chemical The protective "tubes" in which the specific product is shippoertain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information their original packing materials is true and correct to the besompleteness and accuracy of data in this form because it hnformation is often protected from disclosure as trade secretorided only as estimates of the average weight of these potopants, metals, and non-metal materials contained within some more discounted by Microchip Technology Incorporated quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or contervise, suffered by users or third parties as a result of the	emical substance is NOT an inter- comment, there is no credible reas- ulatory scheme world-wide. ammability standard for plastics. s/plastics/ bed are made from polyvinyl chlo in in this form concerning substant of its knowledge and belief, as as been compiled based on the re- test and some information may no arts and the average weight of an aillicon devices (silicon IC) in the arranty, express or implied, with and its subsidiaries are containe	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hold the series of the date listed in this form. Microchip Technology In of the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in the second in this declaration in the declaration in Microchip's standard terms and conditions of surrations and shall not be liable for any damages, directions and shall not be liable for any damages, directions of the date of	to the best of I ration of the control of the contr	Microchip Tec chemical subsi report at slip on the ou semiconductor I cannot guara aterial suppliers. In o not include t sive, limited pi provided in M	hnology tance, if any, ater box and r devices in intee the rs. Supplier formation is race levels of roduct licrochip's	0.13	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.51

Salic Substance	MICROCHIP Semiconductor Device Ty	pe: MV 40 (Lear) UQFN 5x5x0.5mm (S5)		ation Base A	,		•	geneous Materials: g. pc boards, displays	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Heater Substance CAS Number Suic-Component Weight Ingipart 1606 500			"Contained In"				18 45	(mg) Total	Mold Compound	% of Total Weight	43 41
Epon Pennic Pen							101.10	, ,,	•		
Periodic Resin Trade Secret 465 Carbon Black 1333-864 Mole Compound 0.190 0.780											
Carbon Black							Epox				
Copper 7440-90-9 Load Firms											
Tim P740-31-5 Lead Frame 0.108 0.046 1.077 18.3 mg Total Lead Frame 4.08 1 0.349 8.207 2 0.09 14.00 1.07 14.3 10.00 1.07 14.3 10.00 1.07 14.3 10.00 1.00 1.00 1.00 1.00 1.00 1.00 1								Carbon Black		*****	
Sher 7440:24 Leaf Frame 0.821 0.349 8.207 Trotal Value 1.025	- 11							/ \=			
Zinc 1740-96-6 Lead Frame 0.078 0.033 775 Short 7400-96-6 Lead Frame 0.108 0.046 1.077 Short 7400-96-6 0.032 0.014 1.076 Short 7400-96-6 0.032 0							18.31				43.08
Chromium 1740-273 Lead frame 0.0168 0.046 1.077 Silver 740-224 Dea Attach 1.240 0.527 12.402 2.262 2.2											
Sheer T440-224 De Attach 1,240 0,527 1,2402											
Activative resins Proprietary Trade Secret Die Attach 0.238 0.122 2.862 Trade and silica Trade Secret Die Attach 0.032 0.014 318 08 m Trade Secret Die Die Attach 0.032 0.014 318 08 m Trade Secret Die Die Attach 0.032 0.014 318 08 m Trade Secret Die Die Attach 0.032 0.014 318 08 m Trade Secret Die Die Attach 0.032 0.014 318 08 m Trade Secret Die Die Attach 0.032 0.014 318 08 m Trade Secret Die											
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Heterocycic organic compound Trade Secret Die Attach 0.032 0.014 318 0.88 (ma) Total Die Attach 5.60 (Pole) 6.650 0.28.06 (6.65.00 0.28.00 0.65.00 0.28.00 0.65.00 0.28.00 0.0								Chromium			
Silloon 7440-21-3 Chip [Die) 6.650 2.826 66,500 Silver 7440-21-4 78 Gold 7440-97-5 Interpretable of the Bond 1,540 0.655 15,400 Applicate resins Projectary 1,740-22-4 78 Th 7440-31-5 Interpretable of the Bond 1,540 0.655 15,400 Applicate resins Projectary 1,740-22-4 1,78 Th 1,740-31-5 Interpretable of the Bond 1,540 0.050 1,000,000 42,50 1,000,000								/ \=			
The T440-57-5 Wine Bond T740-58 Wine Bond To TAU. St. 100.000 42.500 1,000.0000 IT 1/ Material compliation 0.0425 g Total Mass TOTALS: 100.000 42.500 1,000.0000 IT 1/ Material compliation 0.0425 g Total Mass Total 100.000 100.0000 It is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and the properties of the Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If a chemical substance is absent from the list above, the chemical substance is no recibile reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Midding compounds used by Microchip meet the UL34 V0 fiammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at truty. Plut. com/global-gnippages/offerings/industries/schemical/splastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the utrebs and certain "resis" may be made from PVC) plastic. Will offer the protective "tubes" in which the specific product is shipped are made from formation in sprovided only as estimates of the short offer in which the specific product is shipped are made from formation in sprovided only as estimates of the wave and the provided in Material Safety Data Sheets provided by a war material suppliers. Supplier information is offen protected from disclosures as trade secrets and some information in sprovided only as estimates of the average weight of these parts and the average weight of anticipated subcontract assemblers and raw material suppliers. Supplier information is offen protected from	, , ,						0.68				1.59
Tin											
UTL / Material compilation O.0425 g Total Mass Total (mg) Chip (Die)											
UTL / Material compilation 0.0425 g Total Mass Total 100.00 This semiconductor device and its homogenous materials comply with EU Directive 20025/EC (ROHS Directive), EU Directive 2011/85/EU (ROHS Recast Directive) and with EU Directive 20025/EC (ROHS Directive). 2.83 Total (mg) Chip (Die) %, of Total Weight 6.85 Total of Popel Silicon 7440-21-3 100 To a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip fechnology incorporated sknowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concent for any regulatory scheme world-wide. Midding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at http://ul.com/globalleng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing silp on the buter box and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the Information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated believes the Information in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosures as trade secreted within silicon devices (silicon IC) in the finished parts. Wilding the protective "tubes" in which its grow in the protective of dopants, metals components. These estimates do not included trace levels of dopants, metals, and non-	III	7440-31-5					Hata				
This semiconductor device and its homogenous materials comply with EU Directive 2002/5/FC (ROHS Directive), EU Directive 2011/6/FU (ROHS Recast Directive) and with EU Directive 2002/5/FC (End-of-Life Vehicles (ELV) Directive). 1 Total (mg) 1 Chip (Die) 2.83 1 Total (mg) 1 Chip (Die) 3 Total (mg) 1 Doped Silicon 7 440-21-3 1 00.00 1 Doped Silicon 7 440-21-3 1 00.00 2.83 1 Total (mg) 1 Doped Silicon 7 Ado-21-3 1 00.00 2.83 1 Total (mg) 2.83 1 Total (mg) 2.83 1 Total (mg) 2.83				100.000	42.500	1,000,000	Hete	ocyclic organic compound			
with EU Directive 2002/53/EC (End-of-Lie Vehicles (ELU) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding compounds used by Microchip Technology Incorporated the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the buter box and certain "reles" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been complied based on the ranges provided in Material Safety Data Sheets provided by rare material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-material materials contained			0						lotai	100.00	
fa chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at thttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated ses provided by a material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are rovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions, sales order acknowledgement, and invoices. Microchip data in the finished parts. Microchip data in the finished parts are contained in Microc			ctive 2002/95/EC (RoHS Directive), EU Directive 2011/6	65/EU (RoHS R	ecast Directi	ve) and	2.83	Total (mg)	Chip (Die)	% of Total Weight	6.65
Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Modiding compounds used by Microchip meet the UL94 VG ifammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's Semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's by a subscontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the access estimates on the average weight of these parts and the average weight of the average weight of subject and the average weight of subscipated significant toxic metals components. These estimates of the outer acknowledge and belief and the average weight of subscipated significant toxic metals components. These estimates of the varge greate weight of the average weight of these parts and the average weight of the average weight of the average weight of the average weight of the	Compliance with the above EU Directives has been verifie	d via internal design o	controls, supplier declarations, and /or analytical test of	data.		•		Doped Silicon	7440-21-3	100	
http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the buter box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. Thes	Technology Incorporated's knowledge and belief as of the	date of this documen	t, there is no credible reason to believe that the unavo						Total	100.00	
Doped Gold 7440-57-5 100 Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. In the finished parts of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.			d for plastics. You can access the UL iQTM family of d	latabases to ol	otain a test re	eport at	0.65	(mg) Total	Wire Bond	% of Total Weight	1.54
semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip's quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	•		polyvinyl chloride (PVC) plastic. "Window envelopes"	used to hold ti	ne packing s	lip on the		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. 1.59	semiconductor devices in their original packing materials Incorporated cannot guarantee the completeness and acc Sheets provided by raw material suppliers. Supplier inform subcontract assemblers and raw material suppliers. Inform	is true and correct to curacy of data in this fo mation is often protect mation is provided onl	the best of its knowledge and belief, as of the date list orm because it has been compiled based on the range def from disclosure as trade secrets and some informa y as estimates of the average weight of these parts an	ted in this form es provided in l ation may not nd the average	n. Microchip Material Safe nave been pr weight of an	ty Data ovided by ticipated			Total	100.00	_
consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	in the finished parts.				The exclusiv	ve. limited					
Total 100.00	in the finished parts. Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorpovided in Microchip's quotations, sales order acknowled	corporated and its sub dgement, and invoices	sidiaries are contained in Microchip's standard terms s.	and condition	s of sale. The		1.59	(mg) Total		% of Total Weight	3.73
	in the finished parts. Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inc provided in Microchip's quotations, sales order acknowler Microchip disclaims any duty to notify users of updates or consequential or otherwise, suffered by users or third par	corporated and its sub dgement, and invoices r changes to Material (ties as a result of the u	sidiaries are contained in Microchip's standard terms s. Content Declarations and shall not be liable for any da users' reliance on the information in Material Content	and condition	s of sale. The or indirect,	ese are	1.59	. 5/	/ annealed at 150°C for 1		3.73

MV 40 UQFN 7:11 PM : 8/8/2012

MICROCHIP	in Turn OVER 40			nation Base pper Alloy (0	,		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Dev	ice Type: QVCE 16 (Lead) V									63
		"Contained In"	% Total	_		12.83	(mg) Total	Mold Compound	%ot Total Weight	50.7
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		,	Ť		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.095	10.903	430,950		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.411	1.116	44,109		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.042	0.770	30,420		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.152	0.038	1,521		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	41.540	10.510	415,397			Total		
Iron	7439-89-6	Lead Frame	1.022	0.259	10,218	11.00	(mg) Total	Lead Frame	% of Total Weight	43.48
Silver	7440-22-4	Lead Frame	0.828	0.210	8,283		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.054	0.014	544		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.036	0.009	359		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.360	0.344	13,600		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade secret	Die Attach	0.340	0.086	3,400		Phosphorous	7723-14-0	0.08	
Doped GaAs	1300-00-00	Chip (Die)	1.340	0.339	13,400			Total		
Doped Gold	7440-57-5	Wire Bond	0.400	0.101	4,000	0.43	(mg) Total	Die Attach	% of Total Weight	1.7
Tin	7440-31-5 Plating of	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	0.602	23,800		Silver	7440-22-4	80.00	
		TOTALS:	100.000	25.300	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0253 g Tota							Total	100.00	
	Is comply with EU Directive 2002/95/I		oHS Recast D	rective) and	with EU	0.34	(mg) Total	Chip (Die)	% of Total Weight	1.34
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifiched chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the hology Incorporated hology in the hology Incorporated hology in the hology Incorporated hology in the hology in hology in hology in hology in hology in hology in hology in hology in hology in hol	Is comply with EU Directive 2002/95/I e) ed via internal design controls, supp e chemical substance is NOT an inten e date of this document, there is no	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device ar credible reason to believe that the unavoidable ir	nd, to the bes	t of Microchip	- p	0.34	(mg) Total Doped GaAs			1.34
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifich chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the ostance, if any, is not below the threshold of regulator liding compounds used by Microchip meet the UL94 V	Is comply with EU Directive 2002/95/i ed via internal design controls, supple chemical substance is NOT an intented at the control of the con	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device ar credible reason to believe that the unavoidable in world-wide.	nd, to the bes	t of Microchipentration of the	- p	0.34	1	Chip (Die)	% of Total Weight	0.4
is semiconductor device and its homogenous material rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive ompliance with the above EU Directives has been verifical and chemical substance is absent from the list above, the inchnology Incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 Vap://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is sex and certain "reels" may be made from PVC plastic.	Is comply with EU Directive 2002/95/is) ed via internal design controls, supple chemical substance is NOT an intented at a control of this document, there is not by concern for any regulatory scheme of flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device ar credible reason to believe that the unavoidable in world-wide. You can access the UL iQTM family of databases	nd, to the bes mpurity conce s to obtain a te	t of Microchip entration of the est report at	p he chemical		Doped GaAs	Chip (Die) 1300-00-00 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
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QVCE 16 VQFN 7:11 PM : 8/8/2012

100.000

MICROCHIP				mination Bas Copper Alloy			•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devi	ce Type: NQ 72 (Lead)	/QFN 3x3x0.9mm (QV)								e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	180.05	(mg) Total	Mold Compound	% ot Total Weight	52.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	44.880	153.041	448.800		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.594	15.664	45,936		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.168	10.803	31,680		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.158	0.540	1,584		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	36,486	124,416	364.858			Total	100.00	4
Iron	7439-89-6	Lead Frame	0.897	3.060	8,975	130.23	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.728	2.481	7.275	100.20	Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.048	0.163	477	1	Iron	7439-89-6	2.35	1
Phosphorous	7723-14-0	Lead Frame	0.032	0.107	315	1	Silver	7440-22-4	1.91	1
Silver	7440-22-4	Die Attach	0.640	2.182	6,400	1	Zinc	7440-66-6	0.13	1
Epoxy Resin	Trade secret	Die Attach	0.160	0.546	1,600		Phosphorous	7723-14-0	0.08	
Silicon	7440-21-3	Chip (Die)	5.720	19.505	57.200			Total	100.00	3
Doped Gold	7440-57-5	Wire Bond	0.970	3.308	9,700	2.73	(mg) Total	Die Attach	% of Total Weight	
Tin		ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.520	5.183	15.200	2.70	Silver	7440-22-4	80.00	i
1111	7440-31-3 Fig	TOTALS:		341.000	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.044 = 1	Total Mass	100.000	041.000	1,000,000		Epoxy (Cont	Total		4
							(mg) Total	Chip (Die)	% of Total Weight	5.72
ompliance with the above EU Directives has been verif	e chemical substance is NOT ar	intentional ingredient in the semiconductor device					Doped Silicon	7440-21-3	100	
a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of thiny, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 \to://ul.com/global/eng/pages/offerings/industries/chemine protective "tubes" in which the specific product is s	e chemical substance is NOT are is document, there is no credible r any regulatory scheme world- /0 flammability standard for pla nicals/plastics/	n intentional ingredient in the semiconductor device e reason to believe that the unavoidable impurity co wide. stics. You can access the UL iQTM family of databas	oncentration oncentration oncentration	of the chemic	cal substance, if	3.31	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100.00 100.00 % of Total Weight	
a chemical substance is absent from the list above, th corporated's knowledge and belief as of the date of thi y, is not below the threshold of regulatory concern for loding compounds used by Microchip meet the UL94 V ttp://ul.com/global/eng/pages/offerings/industries/chem	e chemical substance is NOT are is document, there is no credibly a rany regulatory scheme world- //O flammability standard for planicals/plastics/ shipped are made from polyviny ation in this form concerning stathe best of its knowledge and bause it has been compiled base at trade secrets and some inforweight of these parts and the action of these parts and the action is weight of these parts and the action is weight of these parts and the action is weight of these parts and the action is secretal.	n intentional ingredient in the semiconductor device reason to believe that the unavoidable impurity covide. stics. You can access the UL iQTM family of databast chloride (PVC) plastic. "Window envelopes" used instances restricted by RoHS in Microchip Technologief, as of the date listed in this form. Microchip Ted on the ranges provided in Material Safety Data She mation may not have been provided by subcontractiverage weight of anticipated significant toxic metals.	ses to obtain to hold the p ogy Incorpora chnology Inc sets provided t assemblers	of the chemic a test report acking slip of ated's semico orporated cal I by raw mate and raw mat	at substance, if at the outer box enductor devices mot guarantee rial suppliers.		Doped Silicon	7440-21-3 Total	100.00 100.00 % of Total Weight	0.97
a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of thiny, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 \(\) the "I/ul.com/global/eng/pages/offerings/industries/chem he protective "tubes" in which the specific product is said certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information their original packing materials is true and correct to be completeness and accuracy of data in this form becomposite information is often protected from disclosure formation is provided only as estimates of the average	e chemical substance is NOT are so document, there is no credibly any regulatory scheme world- //o flammability standard for planicals/plastics/ shipped are made from polyviny attion in this form concerning stathe best of its knowledge and because it has been compiled base as trade secrets and some inform every these parts and the anaterials contained within silicony warranty, express or implied, ted and its subsidiaries are con	n intentional ingredient in the semiconductor device reason to believe that the unavoidable impurity cowide. stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stics. You can access the UL iQTM family of databast compared in the stic	oncentration to hold the p ogy Incorpora chnology Inc eets provided t assemblers s component	of the chemic a test report acking slip or ated's semico orporated car i by raw mate and raw mat ts. These esti e exclusive, lii	at substance, if at n the outer box enductor devices anot guarantee rial suppliers. Erial suppliers. mates do not mited product		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100.00 100.00 % of Total Weight	0.97

NQ 72 VQFN 7:11 PM : 8/8/2012

341.000

AICROCHIP Semiconductor Device	Type: QCF 16 (Lead) V	WOEN 2020 75mm (00)		ation Base A	•			ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
		"Contained In"	% Total			10.05	(mg) Total	Mold Compound	%ot Total Weight	45.91
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm					1
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.024	8.546	390,235		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	3.994 2.755	0.875 0.603	39,942 27,546		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	8.70 6.00	
Carbon Black	1333-86-4	Mold Compound	0.138	0.030	1.377	ł	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48.494	10.620	484.943	ł	Calbuil black	Total	100.00	J
Lopper Iron	7440-50-6	Lead Frame	1.146	0.251	11.463	40.04	(mar) Tatal		% of Total Weight	49.84
	7723-14-0	Lead Frame	0.125	0.251	1,246	10.91	(mg) Total	<u>Lead Frame</u> 7440-50-8	97.30	49.84
Phosphorous					748		Copper			
Zinc (Metal) Silver	7440-44-0 7440-22-4	Lead Frame Die Attach	0.075 1.529	0.016 0.335	15.288		Iron Phosphorous	7439-89-6 7723-14-0	2.30 0.25	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.353	0.335	3,528	ł	Zinc (Metal)	7723-14-0	0.25	
Treated silica	Trade Secret	Die Attach	0.039	0.009	392		ZITIC (Wetai)	Total	100.00]
		Die Attach	0.039	0.009	392	0.43	() T (-1			1.96
Heterocyclic organic compound	Trade Secret					0.43	(mg) Total	Die Attach	% of Total Weight	1.96
Gallium arsenide	1300-00-00	Chip (Die)	1.550	0.339	15,500	l	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.460	0.101	4,600		Acrylate resins Proprietary	Trade Secret	18	
Nickel	7440-02-0	Plating on external leads (pins)	0.265	0.058	2,646		Treated silica	Trade Secret	2	
Palladium	7440-05-03	Plating on external leads (pins)	0.014	0.003	140	Heter	ocyclic organic compound	Trade Secret	2	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.000	14			Total	100.00	
		TOTA	LS: 100.000	21.900	1,000,000	0.34	Total (mg)	Chip (Die)	% of Total Weight	1.55
	0.0219 g To	stal Mass								
	als comply with EU Directive 200		5/EU (RoHS Recast	Directive) and	l with EU		Doped GaAs	1300-00-00 Total	100.00	
semiconductor device and its homogenous materia tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifi	als comply with EU Directive 200 e).	02/95/EC (RoHS Directive), EU Directive 2011/6	·	Directive) and	I with EU	0.10	Doped GaAs (mg) Total			0.46
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifi emical substance is absent from the list above, the ology Incorporated's knowledge and belief as of the	als comply with EU Directive 200 e). ied via internal design controls, e chemical substance is NOT ar le date of this document, there	22/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test to intentional ingredient in the semiconductor is no credible reason to believe that the unavo	lata. levice and, to the be	est of Microch	ip			Total	100.00	0.46
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifi emical substance is absent from the list above, the ology Incorporated's knowledge and belief as of the ince, if any, is not below the threshold of regulator og compounds used by Microchip meet the UL94 V	als comply with EU Directive 200 e). ied via internal design controls, e chemical substance is NOT ar ne date of this document, there ry concern for any regulatory so for flammability standard for pla	p2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test a intentional ingredient in the semiconductor is no credible reason to believe that the unavoicheme world-wide.	lata. levice and, to the b idable impurity cor	est of Microch ecentration of	ip the chemical		(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.46
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive iance with the above EU Directives has been verification with the above EU Directives has been verification in the list above, the logy incorporated's knowledge and belief as of the ince, if any, is not below the threshold of regulator g compounds used by Microchip meet the UL94 Vil.com/global/eng/pages/offerings/industries/chemotective "tubes" in which the specific product is s	als comply with EU Directive 200 e). ied via internal design controls, e chemical substance is NOT ar he date of this document, there ry concern for any regulatory so for flammability standard for planicals/plastics/	page 2016. Supplier declarations, and /or analytical test of intentional ingredient in the semiconductor is no credible reason to believe that the unavoidement world-wide.	lata. levice and, to the be idable impurity cor atabases to obtain a	est of Microch centration of test report at	ip the chemical		(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.46
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verified in the list above, the ology Incorporated's knowledge and belief as of thince, if any, is not below the threshold of regulator ag compounds used by Microchip meet the UL94 Val.com/global/eng/pages/offerings/industries/chemotective "tubes" in which the specific product is sid certain "reels" may be made from PVC plastic. The Technology Incorporated believes the information in their original packing materials is true and contect the completeness and accuracy of data in this ers. Supplier information is often protected from call suppliers. Information is provided only as estimated in the suppliers. Information is provided only as estimated in the suppliers. Information is provided only as estimation is provided only as estimation is provided only as estimation is provided only as estimation.	als comply with EU Directive 20(e). ied via internal design controls, e chemical substance is NOT are date of this document, there ry concern for any regulatory sc (0 flammability standard for planicals/plastics/ thipped are made from polyviny atton in this form concerning surrect to the best of its knowledge form because it has been com disclosure as trade secrets and lates of the average weight of the secrets and states of the average weight of the secrets and secrets are served in the secrets and lates of the average weight of the secrets and secrets are served in the secret and secrets are served in the secret and secrets and secrets and secrets are served in the secret and secrets and secrets and secrets are secrets and secrets and secrets and secrets and secrets are secrets and secrets are secrets and secrets and secrets are secrets and secrets and secrets are secrets and secrets are secrets and secrets and secrets are secrets and secrets are secrets and secrets and secrets are secrets and secrets are secrets and secrets and secrets are secrets are secrets and secrets are secrets are secrets and sec	supplier declarations, and /or analytical test of intentional ingredient in the semiconductor is no credible reason to believe that the unavoineme world-wide. It chloride (PVC) plastic. "Window envelopes" obstances restricted by RoHS in Microchip Tedge and belief, as of the date listed in this form. piled based on the ranges provided in Materia some information may not have been provide less parts and the average weight of anticipat	lata. levice and, to the bidable impurity cor atabases to obtain a used to hold the pa hnology Incorporat Microchip Technol Safety Data Sheets d by subcontract as ed significant toxic	est of Microch icentration of a test report at cking slip on ed's semicon ogy Incorpora provided by semblers and metals compora	ip the chemical the outer ductor ted cannot raw material raw		(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verification with the above EU Directives has been verification of the list above, the lology Incorporated's knowledge and belief as of the ance, if any, is not below the threshold of regulator in any is not below the threshold of regulator utility of the list of the	als comply with EU Directive 20te). led via internal design controls, echemical substance is NOT are date of this document, there ye concern for any regulatory so to flammability standard for planicals/plastics/, hipped are made from polyviny atton in this form concerning surrect to the best of its knowledge form because it has been complisclosure as trade secrets and lates of the average weight of the metals, and non-metal materials y warranty, express or implied, ted and its subsidiaries are con	supplier declarations, and /or analytical test of intentional ingredient in the semiconductor is no credible reason to believe that the unaverseme world-wide. Stics. You can access the UL iQTM family of did in the comment of the c	lata. levice and, to the bidable impurity cor atabases to obtain a used to hold the pa hnology Incorporat Microchip Technol Safety Data Sheets d by subcontract as ed significant toxic n the finished parts is declaration. The	est of Microch icentration of a test report at cking slip on ed's semicon ogy Incorpora is provided by semblers and metals compo	ip the chemical the outer ductor ted cannot raw material raw onents.		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verification with the above EU Directives has been verification of the substance is absent from the list above, the blogy Incorporated's knowledge and belief as of the ince, if any, is not below the threshold of regulator in geompounds used by Microchip meet the UL94 Vil.com/global/eng/pages/offerings/industries/chen dicctive "tubes" in which the specific product is so dicertain "reels" may be made from PVC plastic. The protective subserved the subserved believes the information in the information of the information of the information is supplier information is often protected from call suppliers. Information is often protected from call suppliers. Information is provided only as estiments are subsequently and in the information of the protected from call suppliers. Information is provided only as estiments are subsequently and the provided by Microchip Technology Incorporation in the provided by Microchip Techn	als comply with EU Directive 20(e). led via internal design controls, e chemical substance is NOT are date of this document, there ry concern for any regulatory so (0 flammability standard for planicals/plastics/), thipped are made from polyviny atton in this form concerning surrect to the best of its knowledges form because it has been com disclosure as trade secrets and antes of the average weight of the metals, and non-metal materials y warranty, express or implied, ted and its vesses or implied, and invoices.	supplier declarations, and /or analytical test of a intentional ingredient in the semiconductor is no credible reason to believe that the unavoimment of the world-wide. It chloride (PVC) plastic. "Window envelopes" the stances restricted by RoHS in Microchip Test pand belief, as of the date listed in this form. piled based on the ranges provided in Materia some information may not have been provide sees parts and the average weight of anticipation contained within silicon devices (silicon IC) with respect to the information provided in the tained in Microchip's standard terms and condeclarations and shall not be liable for any data.	levice and, to the bidable impurity cor atabases to obtain a used to hold the pa hinology Incorporat Microchip Technol. Safety Data Sheets d by subcontract as disglificant toxic in the finished parts is declaration. The ditions of sale. These mages, direct or incompared to the sale of the sale	est of Microch icentration of itest report at cking slip on ed's semicon ogy Incorpora provided by semblers and metals compo- exclusive, lim se are provide	ip the chemical the outer ductor ted cannot raw material raw onents. ited product d in uential or		(mg) Total (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	als comply with EU Directive 20(e). led via internal design controls, e chemical substance is NOT are date of this document, there ry concern for any regulatory so (0 flammability standard for planicals/plastics/), thipped are made from polyviny atton in this form concerning surrect to the best of its knowledges form because it has been com disclosure as trade secrets and antes of the average weight of the metals, and non-metal materials y warranty, express or implied, ted and its vesses or implied, and invoices.	supplier declarations, and /or analytical test of a intentional ingredient in the semiconductor is no credible reason to believe that the unavoimment of the world-wide. It chloride (PVC) plastic. "Window envelopes" the stances restricted by RoHS in Microchip Test pand belief, as of the date listed in this form. piled based on the ranges provided in Materia some information may not have been provide sees parts and the average weight of anticipation contained within silicon devices (silicon IC) with respect to the information provided in the tained in Microchip's standard terms and condeclarations and shall not be liable for any data.	levice and, to the bidable impurity cor atabases to obtain a used to hold the pa hinology Incorporat Microchip Technol. Safety Data Sheets d by subcontract as disglificant toxic in the finished parts is declaration. The ditions of sale. These mages, direct or incompared to the sale of the sale	est of Microch icentration of itest report at cking slip on ed's semicon ogy Incorpora provided by semblers and metals compo- exclusive, lim se are provide	ip the chemical the outer ductor ted cannot raw material raw onents. ited product d in uential or		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	

QCF 16 WQFN 7:12 PM : 8/8/2012

Semiconductor Device	Type: QDF 24/16	ead) WQFN 4x4x0.75 mm (QW)		nination Base Copper Alloy (,			eneous Materials: . pc boards, displays))	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Ociniconductor Device	7 Type. 452 24(E	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	17.88	(mg) Total	Mold Compound	% ot Total Weight	45.6
Silica, fused	60676-86-0	Mold Compound	41.040	16.088	410,400		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.212	0.867	22,116	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.212	0.867	22,116		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.137	0.054	1,368		Carbon Black	1333-86-4	0.30	<u>]</u>
Copper	7440-50-8	Lead Frame	47.559	18.643	475,586			Total	100.00	
Iron	7439-89-6	Lead Frame	1.170	0.459	11,698	19.51	(mg) Total	Lead Frame	% of Total Weight	49.78
Silver	7440-22-4	Lead Frame	0.948	0.372	9,483		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.062	0.024	622		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.041	0.016	411		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.858	0.336	8,580		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.198	0.078	1,980		Phosphorous	7723-14-0	0.08	<u>]</u>
Treated silica	Trade Secret	Die Attach	0.022	0.009	220			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.022	0.009	220	0.43	(mg) Total	Die Attach	% of Total Weight	1.1
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	0.870	0.341	8,700		Silver	7440-22-4	78	
Doped Gold	7440-57-5	Wire Bond	0.380	0.149	3,800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.270	0.890	22,700		Treated silica	Trade Secret	2	
		TOTALS:	100.000	39.200	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	<u> </u>
	0.0392	g Total Mass						Total	100.00	
c comisonductor device and its homogenous materials as	mply with ELL Directive 20	02/05/EC (Bolls Directive) Ell Directive 2011/65/Ell (Bolls	Pagast Direc	stive) and with	EII Directive					
2/53/EC (End-of-Life Vehicles (ELV) Directive).		02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Recast Direc	ctive) and with	EU Directive	0.34	(mg) Total	Chip (Die)	% of Total Weight	0.87
		, , ,	Recast Direc	ctive) and with	EU Directive	0.34	(mg) Total Gallium arsenide (GaAs)	1303-00-0	100	
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified we chemical substance is absent from the list above, the chorporated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any regulatory concern for any regulatory.	ria internal design controls emical substance is NOT a cument, there is no credib ilatory scheme world-wide	s, supplier declarations, and for analytical test data. In intentional ingredient in the semiconductor device and, to be reason to believe that the unavoidable impurity concents.	o the best of ration of the	Microchip Tec chemical subs	chnology	0.34		,		
2/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified we chemical substance is absent from the list above, the chorporated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any regulatory concern for any regulatory.	ia internal design controls mical substance is NOT a cument, there is no credib ilatory scheme world-wide	s, supplier declarations, and for analytical test data. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concentry.	o the best of ration of the	Microchip Tec chemical subs	chnology	0.34		1303-00-0	100	
2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified vehicles in the list above, the cheorporated's knowledge and belief as of the date of this do to below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flact/ful.com/global/eng/pages/offerings/industries/chemical	ia internal design controls emical substance is NOT ar cument, there is no credib ilatory scheme world-wide ummability standard for pla s/plastics/	s, supplier declarations, and for analytical test data. In intentional ingredient in the semiconductor device and, to be reason to believe that the unavoidable impurity concents.	o the best of ation of the obtain a test	Microchip Tec chemical subs	chnology stance, if any,		Gallium arsenide (GaAs)	1303-00-0 Total	100	
2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified vehicles (ELV) and the distance is absent from the list above, the cheorporated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flat/ul.com/global/eng/pages/offerings/industries/chemical exprotective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the information is original packing materials is true and correct to the besuppleteness and accuracy of data in this form because it homation is often protected from disclosure as trade secret.	ria internal design controls camical substance is NOT and cument, there is no credibilatory scheme world-wide ammability standard for place in this form concerning set of its knowledge and belies been compiled based or its and some information in the average weight	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. It is a considerable in the content of the c	o the best of ration of the obtain a test d the packing corporated's Incorporate led by raw m d raw materia	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie	chnology stance, if any, uter box and or devices in antee the rrs. Supplier iformation is		Gallium arsenide (GaAs) (mg) Total	1303-00-0 Total	100 100.00 % of Total Weight	0.38
2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified with the above EU Directives has been verified with the chorporated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flb.://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippitain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the information in original packing materials is true and correct to the besupleteness and accuracy of data in this form because it hormation is often protected from disclosure as trade secrevided only as estimates of the average weight of these parants, metals, and non-metal materials contained within secrepting Technology Incorporated does not provide any with the contained within secrepting technology Incorporated does not provide any with the contained within secrepting technology Incorporated does not provide any with the contained within secrepting technology Incorporated does not provide any with the secrepting technology Incorporated does not provide any with the secrepting technology Incorporated does not provide any with the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorporated does not provide any within the secrepting technology Incorp	ria internal design controls amical substance is NOT arcument, there is no credibilatory scheme world-wide ammability standard for plas/plastics/ leed are made from polyving in this form concerning sto fits knowledge and belias been compiled based or its and some information in ris and the average weight illicon devices (silicon IC) interanty, express or implied	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. It is a considerable in the content of the c	o the best of ration of the obtain a test of the packing corporated's Incorporated by Incorporated by raw m of raw materic estimates of the corporate of the co	Microchip Tecchemical substance report at g slip on the or semiconductor d cannot guaraterial supplie al suppliers. Ir o not include sive, limited p	chnology stance, if any, uter box and or devices in antee the rrs. Supplier formation is trace levels of		Gallium arsenide (GaAs) (mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.38
2/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified of the characteristic of the date of this do not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 fit. Dividicom/global/eng/pages/offerings/industries/chemical of protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. Protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. Protective Technology Incorporated believes the information is original packing materials is true and correct to the best apleteness and accuracy of data in this form because it hormation is often protected from disclosure as trade secretided only as estimates of the average weight of these parants, metals, and non-metal materials contained within secretic provided by Microchip Technology Incorporated does not provide any we tranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices.	ria internal design controls emical substance is NOT arcument, there is no credibilatory scheme world-wide unmability standard for plas/plastics/ sed are made from polyving in in this form concerning set of its knowledge and belias been compiled based or its and some information rits and the average weight illicon devices (silicon IC) interaction, express or implied and its subsidiaries are contained.	a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. In intentional ingredient in the semiconductor device and, to the reason to believe that the unavoidable impurity concents. In intentional impurity concents the UL iQTM family of databases to yell chloride (PVC) plastic. "Window envelopes" used to hole ubstances restricted by RoHS in Microchip Technology Interface and the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provided any not have been provided by subcontract assemblers and of anticipated significant toxic metals components. These in the finished parts. With respect to the information provided in this declaration.	o the best of ation of the obtain a test obtain a test of the packing corporated's Incorporated Incorporated by raw mid raw material estimates of on. The exclude. These are ct or indirect or indirect	Microchip Tecchemical substance of the conductor of the c	chnology ttance, if any, uter box and or devices in antee the rs. Supplier iformation is trace levels of irroduct ficrochip's	0.15	Gallium arsenide (GaAs) (mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 100.00 % of Total Weight 100.00	0.38

QDE WQFN 7:12 PM : 8/8/2012

CROCHIP Semiconductor Device	Type: OVPE 124	YOEN good (Sure (G))		nination Bas Copper Alloy				nogeneous Materials: e.g. pc boards, display:	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device	e Type: QABE 12 (Le	"Contained In"	% Total	1	1			T I		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	mag	6.10	(mg) Total	Mold Compound	% ot Total Weight	60.43
Silica, fused	60676-86-0	Mold Compound	54.387	5,493	543,870		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.931	0.296	29,309		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.931	0.296	29,309		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.181	0.018	1,813		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	34.039	3.438	340,391			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.908	0.092	9,078	3.61	(mg) Total	Lead Frame	% of Total Weight	35.74
Silicon	7440-21-3	Lead Frame	0.161	0.016	1,608		Copper	7440-50-8	95,24	
Magnesium	7439-95-4	Lead Frame	0.036	0.004	357		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.597	0.060	5,965		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.904	0.091	9.040		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.226	0.023	2,260		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.124	12,300		Gilver	Total	100.00	
Gallium arsenide (GaAs) Gold	7440-57-5	Wire Bond	0.370	0.037	3,700	0.11	(mg) Total	Die Attach	% of Total Weight	1.13
						0.11				1.13
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000		Silver	7440-22-4	80.00	
		TOTALS:	100.000	10.100	1,000,000		Epoxy Resin	Trade secret Total	20.00	
		g Total Mass						10101	100.00	
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	t Directive) a	nd with EU	0.12	(mg) Total Gallium arsenide (GaAs)	Chip (Die)	% of Total Weight	1.23
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ance with the above EU Directives has been verified	d via internal design contro	, ,		·		0.12	T	,		1.23
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ance with the above EU Directives has been verified inical substance is absent from the list above, the door of the logy Incorporated's knowledge and belief as of the	. d via internal design controchemical substance is NOT date of this document, the	ols, supplier declarations, and /or analytical test data. I an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	and, to the l	pest of Microc	chip	0.12	T) 1303-00-0	100.00	1.23
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ince with the above EU Directives has been verified inical substance is absent from the list above, the copy Incorporated's knowledge and belief as of the ce, if any, is not below the threshold of regulatory compounds used by Microchip meet the UL94 VO	d via internal design contro chemical substance is NOI date of this document, the concern for any regulatory flammability standard for	ols, supplier declarations, and /or analytical test data. I an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	and, to the leading impurity co	pest of Microconcentration c	chip of the chemical	0.12	T) 1303-00-0	100.00	0.37
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ance with the above EU Directives has been verified mical substance is absent from the list above, the clogy Incorporated's knowledge and belief as of the ce, if any, is not below the threshold of regulatory compounds used by Microchip meet the UL94 V0.com/global/eng/pages/offerings/industries/chemicatective "tubes" in which the specific product is shifted.	d via internal design controchemical substance is NOT date of this document, the concern for any regulatory flammability standard for cals/plastics/	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide.	and, to the less impurity co	pest of Microconcentration of a test report	chip of the chemical at		Gallium arsenide (GaAs	1303-00-0 Total	100.00	
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ance with the above EU Directives has been verified inical substance is absent from the list above, the conjugation of the conjugati	d via internal design controchemical substance is NOT date of this document, the concern for any regulatory flammability standard for cals/plastics/	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used to	and, to the I impurity co ses to obtain	pest of Microconcentration of a test report	chip of the chemical at n the outer box		Gallium arsenide (GaAs	Total Wire Bond	100.00 100.00 % of Total Weight	
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ance with the above EU Directives has been verified in the list above, the logy Incorporated's knowledge and belief as of the ice, if any, is not below the threshold of regulatory a compounds used by Microchip meet the UL94 V0.com/global/eng/pages/offerings/industries/cheminated in the ice, if any is not below the threshold of regulatory a compounds used by Microchip meet the UL94 V0.com/global/eng/pages/offerings/industries/cheminated in the elements in which the specific product is shitted in the elements in the information in the information in the information is often protected from disc. Supplier information is often protected from disc. Supplier information is often protected from disc.	d via internal design contri- chemical substance is NOI date of this document, the concern for any regulatory flammability standard for cals/plastics/ ipped are made from polysion on in this form concerning ect to the best of its knowl orm because it has been c sclosure as trade secrets a e average weight of these p	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of databas	and, to the Ist impurity co less to obtain to hold the p gy Incorpora chip Techno y Data Sheet ubcontract a oxic metals o	pest of Microconcentration of a test report acking slip of ated's semicology Incorpoiss provided by ssemblers ar	chip of the chemical at on the outer box onductor rated cannot y raw material of raw material		Gallium arsenide (GaAs	1303-00-0 Total Wire Bond 7440-57-5	100.00 100.00 % of Total Weight	
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Contained in Sub-Component Weight Sub-Component Weight Weight Sub-Component Weight Weight Sub-Component Weight Weight Sub-Component Weight Weigh	MICROCHIP Semiconductor Device	e Tyne: OXCF 16#4	ead) XQFN 3x3x0.45mm (QR)		nation Base oper Alloy (0				nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
State Content Conten		<u> </u>	"Contained In"				7.94	(mg) Total	Mold Compound	%ot Total Weight	44.83
Story Rean Trade Secont Mod Corrocated 2,174 0,385 2,1745				·							ī
Prientic Report Trade Socret Mode Corregord 2,174 0,385 21,125 1,355 1											
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Copper 1744-050-9 Leaf Frame 45.544 0.070 456,442 To 100.00 100.0											
Nickel 7440-209 Lead Frame 1,215 0,215 12,146 8,47 (mp) Total Lead Frame 9,215 0,338 2,152 Capter 7469-954 Capter 7469-9			The state of the s					Calbuil black		0.00	<u>J</u>
Silicon 744021-3 Lead Frame 0.215 0.038 2.152 Magnesiam 744024-4 Lead Frame 0.048 0.048 1.008 2.152 Sheer 7440-224 Lead Frame 0.748 0.048 1.048 1.788 1.048 1.240 0.05 2.24 1.045							0.47	(mg) Total			47.00
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The T440-31-5 Pestrog transmission of the pestrogram of the pestro					0.099		0.16	(mg) Total			0.91
TOTALS: 100.000 17.72 1,000,00					0.601		00				0.01
This semiconductor device and its homogenous materials comply with EU Directive 2002/59/EC (End-of-Life Vehicles (ELV) Directive). Output the above EU Directives (ELV) Directive 2002/59/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives have the above EU Directives abbean verified via internal design controls, supplier declarations, and /or analytical test data. Compliance with the above EU Directives have the chief and substance is shown the chief and substance is absent from the list above, the chiercial substance is one of the threshold of regulatory concern for any regulatory scheme world-whom the substance is absent threshold of regulatory concern for any regulatory scheme world-whom the substance is absent threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory concern for any regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concern for any regulatory scheme world-whom the substance is a shore threshold of regulatory concerns the substance is a shore threshold or substance is a shore threshold of regulatory concerns the substance is a shore threshold of regulatory concerns the substance is a shore threshold of regulatory concerns the substance is a shore threshold of regulatory concerns the substance is a shore threshold of regulatory concerns the substance is a shore threshold of regulatory concerns the substance is a shore threshold or substance is a shore t	· · · · · · · · · · · · · · · · · · ·										
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Gallum arsenide 1303-0-0 100.				HS Recast Di	rective) and	with EU	0.44	(mg) Total			
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Interpt/ful.com/global/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Wilcrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot apuarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials uspliers information in provided only as estimates of the average weight of anticipated significant toxic metals components. Wilcrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip Technology Incorporated and its subsidiaries are contained in Microchip Technology Incorporated and its subsidiaries are contained in Microchip Technology Incorporated and its subsidiaries are contained in Microchip Technology I			an intentional ingredient in the companyings and decise and	d 40 460 6004	of Microchin				Total]
Doped Gold 7440-57-5 100.00 Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot assurptions of the protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or 1 hour Tin 7440-31-5 100.00	Technology Incorporated's knowledge and belief as of the o	date of this document, there	e is no credible reason to believe that the unavoidable in						Total		
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warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices. Control Control	Technology Incorporated's knowledge and belief as of the c substance, if any, is not below the threshold of regulatory of Molding compounds used by Microchip meet the UL94 V0 fl http://ul.com/global/eng/pages/offerings/industries/chemica The protective "tubes" in which the specific product is ship	date of this document, there concern for any regulatory s lammability standard for pl als/plastics/	e is no credible reason to believe that the unavoidable in scheme world-wide. lastics. You can access the UL iQTM family of databases	npurity conce	entration of the	ne chemical	0.10		Wire Bond 7440-57-5	100.00 % of Total Weight	
otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 SGS) or of this Certificate of Compliance for semiconductor products.	Technology Incorporated's knowledge and belief as of the countries of the	date of this document, thereconcern for any regulatory standard for plals/plastics/ oped are made from polyvir on in this form concerning set to the best of its knowled rm because it has been conclosure as trade secrets and es of the average weight of	e is no credible reason to believe that the unavoidable in scheme world-wide. lastics. You can access the UL iQTM family of databases anyl chloride (PVC) plastic. "Window envelopes" used to least the control of the	to obtain a te nold the pack Incorporated ip Technolog Data Sheets p contract asses	entration of the est report at ing slip on the 's semicond y Incorporate rovided by remblers and in the entry that is the estimate of the esti	ne chemical ne outer uctor ed cannot aw material	0.10		Wire Bond 7440-57-5	100.00 % of Total Weight	
Total 400.00	Technology Incorporated's knowledge and belief as of the country compounds used by Microchip meet the UL94 Vo fi http://ul.com/global/eng/pages/offerings/industries/chemice/ The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informatio devices in their original packing materials is true and correspurate the completeness and accuracy of data in this for suppliers. Supplier information is often protected from disc material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, met Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated warranties provided by Microchip Technology Incorporated	date of this document, thereconcern for any regulatory standard for plats/plastics/ sped are made from polyvir on in this form concerning set to the best of its knowled rum because it has been conclosure as trade secrets and es of the average weight of tals, and non-metal material varranty, express or implied and its subsidiaries are collaboration.	e is no credible reason to believe that the unavoidable in scheme world-wide. lastics. You can access the UL iQTM family of databases myl chloride (PVC) plastic. "Window envelopes" used to least the control of the c	to obtain a te mold the pack Incorporated ip Technolog Data Sheets p pontract asse cant toxic me ished parts.	est report at ing slip on the 's semicond y Incorporate rovided by mblers and retals compor	ne outer uctor ed cannot aw material aw eents.		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100.00	
	Technology Incorporated's knowledge and belief as of the coubstance, if any, is not below the threshold of regulatory conditions of the compounds used by Microchip meet the UL94 V0 finttp://ul.com/global/eng/pages/offerings/industries/chemical The protective "tubes" in which the specific product is ship boox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this for suppliers. Supplier information is often protected from discontain suppliers. Information is provided only as estimates are set in a set of the provided only as estimates. These estimates do not include trace levels of dopants, met warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of the provided of the provided of the provide of the provided of the	date of this document, thereconcern for any regulatory a lammability standard for plais/plastics/ oped are made from polyvir on in this form concerning a cit to the best of its knowled rim because it has been conclosure as trade secrets and easy of the average weight of talls, and non-metal material and its subsidiaries are controlled.	e is no credible reason to believe that the unavoidable in scheme world-wide. lastics. You can access the UL iQTM family of databases myl chloride (PVC) plastic. "Window envelopes" used to least the substances restricted by RoHS in Microchip Technology day and belief, as of the date listed in this form. Microchip mpiled based on the ranges provided in Material Safety Idea of the substances and the average weight of anticipated significates contained within silicon devices (silicon IC) in the final, with respect to the information provided in this declar ontained in Microchip's standard terms and conditions on the Declarations and shall not be liable for any damages, of	to obtain a te mold the pack Incorporated ip Technolog Data Sheets p contract asse cant toxic me ished parts. ation. The ex f sale. These	est report at ing slip on the 's semicond y Incorporate rovided by ra mblers and retals compor clusive, limit are provided	ne outer uctor ed cannot aw material aw eents. ed product in ential or		Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100.00 100.00 % of Total Weight	

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MICROCHIP Semiconductor Device Type	OP 16 # 10 00	OB was		ation Base A	•		•	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	E QR 10 (Lead) Q3									63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	48.50	(mg) Total	Mold Compound	% ot Total Weight	58
Silica, vitreous	60676-86-0	Mold Compound	49.300	41.225	493,000		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.421	1.188	14,210		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.174	0.145	1,740		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.893	30.014	358.934			Total	100.00	
Iron	7439-89-6	Lead Frame	0.883	0.738	8,829	31.42	(mg) Total	Lead Frame	% of Total Weight	37.57
Silver	7440-22-4	Lead Frame	0.716	0.598	7,157		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.047	0.039	470		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.031	0.026	310		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.222	0.186	2,220		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.060	0.050	600		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.009	0.008	90		Priospriorous	7723-14-0 Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.009	0.008	90	0.25	(mg) Total	Die Attach	% of Total Weight	0.3
Silicon	7440-21-3	Chip (Die)	1.760	1.472	17,600		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.600	0.502	6,000		Epoxy resin	Trade Secret	20	
Tin	7440-31-5 Platin	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.770	1.480	17,700		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	83.620	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.0836 g To	otal Mass						Total	100.00	
Compliance with the above EU Directives has been verified via i	•						Doped Silicon	7440-21-3	100	
		intentional ingredient in the semiconductor device	and to the he	est of Microch	in			Total	100.00	
Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regular		s no credible reason to believe that the unavoidabl						Total	100.00	
	tory concern for any reginability standard for plas	s no credible reason to believe that the unavoidablulatory scheme world-wide.	e impurity con	centration of	the	0.50	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.6
chemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamn	tory concern for any reginability standard for plastics/	s no credible reason to believe that the unavoidabl ulatory scheme world-wide. stics. You can access the UL iQTM family of databa	e impurity con	centration of test report a	the t	0.50	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.6
chemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped	tory concern for any regularity standard for plass lastics/ are made from polyvinyl this form concerning suithe best of its knowledguecause it has been compulsional disclosure as trade secres of the average weight.	s no credible reason to believe that the unavoidable alatory scheme world-wide. tics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used bestances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safe ets and some information may not have been prov of these parts and the average weight of anticipaters.	e impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technolo ty Data Sheets ided by subco d significant to	test report at cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals cc	the tthe outer ductor sted cannot raw blers and	0.50		Wire Bond	% of Total Weight	0.6
chemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimater	tory concern for any reginability standard for plas lastics/ are made from polyvinyl this form concerning suithe best of its knowledguecause it has been complisciosure as trade secros of the average weight and non-metal materials unty, express or implied, ated and its subsidiaries	s no credible reason to believe that the unavoidable ulatory scheme world-wide. tics. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microilled based on the ranges provided in Material Safets and some information may not have been proport these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this deviction in the service of the servic	e impurity con ses to obtain a to hold the pa ogy Incorporat schip Technolo ty Data Sheets ided by subco d significant to finished parts claration. The	test report and cking slip on the cking slip on	the the outer ductor atted cannot raw blers and mponents.	0.50		Wire Bond 7440-57-5	% of Total Weight	0.6
chemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from aw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals, Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor	tory concern for any regularity standard for plas lastics/ are made from polyvinyl this form concerning suithe best of its knowledg eccause it has been complete disclosure as trade secres of the average weight and non-metal materials with the secretary express or implied, ated and its subsidiaries invoices. In the secretary expression of the secretary expression expression of the secretary expression expre	s no credible reason to believe that the unavoidable ulatory scheme world-wide. stics. You can access the UL iQTM family of databate chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technole e and belief, as of the date listed in this form. Microbiled based on the ranges provided in Material Safe ets and some information may not have been proof these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and concellarations and shall not be liable for any damage.	e impurity con- ses to obtain a to hold the pa gy Incorporat chip Technol ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s s, direct or inc	test report at cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals contained by the	the the outer ductor sted cannot raw blers and omponents.		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
hemical substance, if any, is not below the threshold of regular lolding compounds used by Microchip meet the UL94 V0 flamn ttp://ul.com/global/eng/pages/offerings/industries/chemicals/p he protective "tubes" in which the specific product is shipped ox and certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the information in evices in their original packing materials is true and correct to uarantee the completeness and accuracy of data in this form broth aterial suppliers. Information is often protected from aw material suppliers. Information is provided only as estimate hese estimates do not include trace levels of dopants, metals, licrochip Technology Incorporated does not provide any warra roduct warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in licrochip disclaims any duty to notify users of updates or chan therwise, suffered by users or third parties as a result of the us	tory concern for any regularity standard for plas lastics/ are made from polyvinyl this form concerning suithe best of its knowledg eccause it has been complete disclosure as trade secres of the average weight and non-metal materials with the secretary express or implied, ated and its subsidiaries invoices. In the secretary expression of the secretary expression expression of the secretary expression expre	s no credible reason to believe that the unavoidable ulatory scheme world-wide. stics. You can access the UL iQTM family of databate chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technole e and belief, as of the date listed in this form. Microbiled based on the ranges provided in Material Safe ets and some information may not have been proof these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and concellarations and shall not be liable for any damage.	e impurity con- ses to obtain a to hold the pa gy Incorporat chip Technol ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s s, direct or inc	test report at cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals contained by the	the the outer ductor sted cannot raw blers and omponents.		Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight	

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Basic Substance Silica, vitreous Epoxy Resin Phenolic Resin	CAS Number	"Contained In"								e3
Silica, vitreous Epoxy Resin	O/IO Humber	Sub-Component	% Total Weight	mg/part	ppm	62.24	(mg) Total	Mold Compound	% ot Total Weight	79.8
Epoxy Resin	60676-86-0	Mold Compound	69.354	54.096	693,542		Silica, vitreous	60676-86-0	86.91	(
Phenolic Resin	Trade Secret	Mold Compound	6.121	4.774	61,207		Epoxy Resin	Trade Secret	7.67	il
	Trade Secret	Mold Compound	4.078	3.181	40,778		Phenolic Resin	Trade Secret	5.11	il
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474		Carbon Black	1333-86-4	0.31	i
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.192	2,468	8.19	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000		Copper	7440-50-8	95.54	i
Zinc	7440-66-6	Lead Frame	0.013	0.010	131		Iron	7439-89-6	2.35	i
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87		Silver	7440-22-4	1.91	i
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625		Zinc	7440-66-6	0.13	d
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1,050		Phosphorous	7723-14-0	0.08	ان
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.020	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000		Silver (Ag)	7440-22-4	75	i
Doped Gold	7440-57-5	Wire Bond	0.200	0.156	2,000		Modified Epoxy Resin	13561-08-5	14	il
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500	D	iglycidylether of bisphenol-F	54208-63-8	8	il
		TOTALS:	100.000	78.000	1,000,000		Modified Amine	827-43-0	4	ī
	0.0780	g Total Mass						Total	100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inte	ernal design conti	ols, supplier declarations, and /or analytical test data.			-	5.85	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
hemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t nical substance, if any, is not below the threshold of regulator	this document, th	ere is no credible reason to believe that the unavoidable						Total	100.00	1
ing compounds used by Microchip meet the UL94 V0 flammat //ul.com/global/eng/pages/offerings/industries/chemicals/plas		plastics. You can access the UL iQTM family of database	ses to obtain	a test report a	at	0.16	(mg) Total	Wire Bond	% of Total Weight	0.2
protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	a made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the p	acking slip or	n the outer		Doped Gold	7440-57-5	100	
ochip Technology Incorporated believes the information in thi ces in their original packing materials is true and correct to th- not guarantee the completeness and accuracy of data in this fo material suppliers. Supplier information is often protected fron raw material suppliers. Information is provided only as estima ponents. These estimates do not include trace levels of dopan	e best of its know orm because it has m disclosure as tr ates of the average	ledge and belief, as of the date listed in this form. Micro s been compiled based on the ranges provided in Mater rade secrets and some information may not have been p e weight of these parts and the average weight of anticip	ochip Techno rial Safety Dat provided by s pated signific	ology Incorpor ta Sheets prov subcontract as cant toxic met	rated vided by ssemblers tals			Total	100.00	'
ochip Technology Incorporated does not provide any warranty	ed and its subsidia	ied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c				0.98	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
nuct warranties provided by Microchip Technology Incorporate licrochip's quotations, sales order acknowledgement, and invo										
	s to Material Cont s' reliance on the						Tin	7440-31-5	100.00	

OA SN TC SAE 08 SOIC 7:12 PM: 8/8/2012

Semiconductor Device Typ	e: SAF 08 (Lead) SOIC 3.90mm(.150in) (3B)		ination Base opper Alloy (•		Package Homoge 8.1 Electronics (e.g.		ys)	JEDEC 97 Produc Marking and/or Pkg. Labeling e4
	CAS Number	"Contained In" Sub-Component	% Total Weight			45.00	(mg) Total	Mold Compound	% ot Total	60
Basic Substance Silica, vitreous	60676-86-0	Mold Compound	51.000	mg/part 38.250	ppm 510,000		Silica, vitreous	60676-86-0	Weight 85.0000	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750		Epoxy Resin	Trade Secret	6.1250	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750		Phenolic Resin	Trade Secret	6.1250	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	1.103	14,700		Epoxy, Cresol Novolac	29690-82-2	2.4500	
Carbon Black	1333-86-4	Mold Compound	0.180	0.135	1,800		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	30.572	22.929	305,720			Total	100.00	l
Iron	7439-89-6	Lead Frame	0.752	0.564	7,520	24.00	(mg) Total	Lead Frame	% of Total Weight	32
Silver	7440-22-4	Lead Frame	0.610	0.457	6,096		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.040	0.030	400		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.026	0.020	264		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.059	0.044	592		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.016	0.012	160		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.002	0.002	24			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.002	24	0.06	(mg) Total	Die Attach	% of Total Weight	0.08
Silicon	7440-21-3	Chip (Die)	4.820	3.615	48,200		Silver	7440-22-4	74	
Doped Gold	7440-57-5	Wire Bond	0.100	0.075	1,000		Epoxy resin	Trade Secret	20	
Nickel	7440-02-0	Plating on external leads (pins)	2.835	2.126	28,350		Metal oxide	Trade Secret	3	
Palladium	7440-05-03	Plating on external leads (pins)	0.150	0.113	1,500		Gamma-butyrolactone	96-48-0	3	
Gold	7440-57-5	Plating on external leads (pins)	0.015	0.011	150			Total	100.00	
		TOTALS:	100.000	75.000	4 000 000	3.62	(mg) Total	01 ((01)	% of Total	4.82
							(iiig) i otai	Chip (Die)	Weight	
		g Total Mass			1,000,000		Doped Silicon	7440-21-3	Weight 100	
is semiconductor device and its homogenous materials comply h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).					, ,				100 100.00	
	with EU Directive 2002	2/95/EC (RoHS Directive), EU Directive 20	011/65/EU (Ro		, ,	0.08		7440-21-3	100	0.1
h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2002 rnal design controls, s substance is NOT an his document, there is	2/95/EC (RoHS Directive), EU Directive 20 supplier declarations, and /or analytical intentional ingredient in the semiconducts no credible reason to believe that the u	011/65/EU (Ro test data.	HS Recast Dir	ective) and	0.08	Doped Silicon	7440-21-3 Total	100 100.00 % of Total	
h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of the emical substance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 flammab	with EU Directive 2002 rnal design controls, substance is NOT an his document, there is concern for any regulility standard for plas	2/95/EC (RoHS Directive), EU Directive 20 supplier declarations, and /or analytical of intentional ingredient in the semiconducts is no credible reason to believe that the unlatory scheme world-wide.	011/65/EU (Ro test data. ctor device an inavoidable ir	HS Recast Dir d, to the best npurity conce	of Microchip	0.08	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of temical substance, if any, is not below the threshold of regulatory	with EU Directive 2002 rnal design controls, substance is NOT an his document, there is concern for any regulility standard for plastics/	2/95/EC (RoHS Directive), EU Directive 20/95/EC (RoHS Directive), EU Directive 20/95/EC (RoHS Directive), and /or analytical sintentional ingredient in the semiconducts no credible reason to believe that the ulatory scheme world-wide.	011/65/EU (Ro test data. ctor device an inavoidable ir of databases	HS Recast Dir d, to the best npurity conce to obtain a te	of Microchip ntration of the	2.25	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology incorporated's knowledge and belief as of the date of the emical substance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 flammab p://ul.com/global/eng/pages/offerings/industries/chemicals/plaster protective "tubes" in which the specific product is shipped are	with EU Directive 2002 rnal design controls, substance is NOT an his document, there is concern for any reguliity standard for plastics/ made from polyvinyl form concerning subdictive correct to the best accuracy of data in this ormation is often protormation is provided	"/95/EC (RoHS Directive), EU Directive 20 supplier declarations, and /or analytical sintentional ingredient in the semiconducts no credible reason to believe that the ulatory scheme world-wide. tics. You can access the UL iQTM family chloride (PVC) plastic. "Window envelopestances restricted by RoHS in Microchip of its knowledge and belief, as of the data is form because it has been compiled bacted from disclosure as trade secrets a only as estimates of the average weight	on 1/65/EU (Ro dest data. eter device an inavoidable in of databases des" used to le or Technology the listed in this sed on the ra ind some info of these part	d, to the best npurity conce to obtain a te nold the packi Incorporated's form. Microcages providec mation may r s and the aver	of Microchip ntration of the est report at ing slip on the schip d in Material not have been rage weight of		Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads	100 100.00 % of Total Weight 100.00 100.00	0.1
th EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via interpretation of the common	with EU Directive 2002 rnal design controls, is substance is NOT an inis document, there is concern for any reguliity standard for plastics/ made from polyvinyl form concerning subdictive to the best accuracy of data in this ormation is often protormation is provided onot include trace left.	supplier declarations, and /or analytical intentional ingredient in the semiconducts no credible reason to believe that the ulatory scheme world-wide. tics. You can access the UL iQTM family chloride (PVC) plastic. "Window envelopestances restricted by RoHS in Microchip of its knowledge and belief, as of the datas form because it has been compiled based only as estimates of the average weight vels of dopants, metals, and non-metal in with respect to the information provided	on the state of th	d, to the best npurity conce to obtain a te nold the packi Incorporated's form. Microcages providec mation may r s and the averained within sation. The excation. The excation.	of Microchip ntration of the st report at ing slip on the schip d in Material not have been rage weight of silicon		Doped Silicon (mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.1
h EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via interpretation of the common o	with EU Directive 2002 rnal design controls, is substance is NOT an his document, there is concern for any regulility standard for plastics/ made from polyvinyl form concerning subdictive correct to the best accuracy of data in the ormation is often protormation is provided to not include trace le express or implied, with and invoices. It to Material Content I esult of the users' release.	2/95/EC (RoHS Directive), EU Directive 20/95/EC (RoHS Directive), and /or analytical sintentional ingredient in the semiconducts no credible reason to believe that the ulatory scheme world-wide. Itics. You can access the UL iQTM family chloride (PVC) plastic. "Window envelopestances restricted by RoHS in Microchip is tances restricted by RoHS in Microchip is tances restricted by RoHS in Microchip is tance secrets at a been compiled basected from disclosure as trade secrets a only as estimates of the average weight vels of dopants, metals, and non-metal is with respect to the information provided are contained in Microchip's standard to declarations and shall not be liable for an innee on the information in Material Con	on the state of the state of databases ones" used to be on the rain of the spart materials continuity of these part materials continuity of the spart materials continuity of th	d, to the best npurity conce to obtain a te nold the packi Incorporated's form. Microcages provided remation may real ained within station. The excellitions of sale direct or indirection direct or indirection or indirection or indirection or indirection.	of Microchip ntration of the st report at ing slip on the schip d in Material oot have been rage weight of silicon		Doped Silicon (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (nins) 7440-02-0	100 100.00 % of Total Weight 100.00 % of Total Weight 94.50	0.1

SAF 08 SOIC 7:12 PM : 8/8/2012

AICROCHIP Somicenduster David	o Tunos SI 44 a a SOI	2 a		nation Base pper Alloy (0	,		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	e Type: SL 14 (Lead) SOI	* * *	0/							
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	114.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	99.315	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	8,765	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.839	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.354	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	14.365	100.314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.353	2,468	15.04	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.286	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.019	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.012	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.806	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.150	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.081	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.038	263	1.07	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	10.740	75,000		Silver (Ag)	7440-22-4	75.00	
Doped Gold	7440-57-5	Wire Bond	0.200	0.286	2.000		Modified Epoxy Resin	13561-08-5	14.00	
Tin	7440-31-5 Platin	ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.790	12.500		Diglycidylether of bisphenol	54208-63-8	7.50	
****	7710010 1144			143.200	1.000.000		Modified Amine			
		IOTALS:	100.000					827-43-0	3.50	
	0.1432 g To comply with EU Directive 2002/9				,,	10.74	(mg) Total	827-43-0 Total Chip (Die)	3.50 100.00 %of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified the mical substance is absent from the list above, the control of the list above.	comply with EU Directive 2002/s via internal design controls, su hemical substance is NOT an in	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an	oHS Recast Di	irective) and	with EU	10.74		Total	100.00	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified chemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of re- ling compounds used by Microchip meet the UL94 VO	comply with EU Directive 2002/s via internal design controls, su hemical substance is NOT an in date of this document, there is r gulatory concern for any regula lammability standard for plastic	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an to credible reason to believe that the unavoidable in tory scheme world-wide.	oHS Recast Di	irective) and t of Microchi entration of th	with EU	0.29	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
is semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of rediing compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	via internal design controls, su hemical substance is NOT an in date of this document, there is r gulatory concern for any regula lammability standard for plastic als/plastics/	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an no credible reason to believe that the unavoidable in tory scheme world-wide. ss. You can access the UL iQTM family of databases	oHS Recast Di	irective) and t of Microchip entration of the	with EU		(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified the mical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redling compounds used by Microchip meet the UL94 V0 1://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship	via internal design controls, su hemical substance is NOT an in date of this document, there is r gulatory concern for any regula lammability standard for plastic als/plastics/ oped are made from polyvinyl cl on in this form concerning subsi ct to the best of its knowledge a rm because it has been compile closure as trade secrets and sor es of the average weight of thes	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an to credible reason to believe that the unavoidable in tory scheme world-wide. 25. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to be tances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchi databased on the ranges provided in Material Safety I me information may not have been provided by sub e parts and the average weight of anticipated signifi	ohls Recast Di nd, to the besingurity conce to obtain a to hold the pack Incorporated ip Technolog Data Sheets p contract asse- icant toxic m	t of Microchipentration of the streport at thing slip on the semicond y Incorporate rovided by racent and is semilers and is semilers.	with EU phe ne outer uctor ed cannot aw material raw		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified the mical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of reding compounds used by Microchip meet the UL94 V0 (2)/UL.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information ces in their original packing materials is true and correctance the completeness and accuracy of data in this foliers. Supplier information is often protected from diserial suppliers. Information is provided only as estimated the completenes and accuracy of data in this foliers.	via internal design controls, su hemical substance is NOT an in date of this document, there is r gulatory concern for any regula lammability standard for plastic als/plastics/ oped are made from polyvinyl clon in this form concerning substict to the best of its knowledge a rm because it has been compile closure as trade secrets and sor so of the average weight of thes tals, and non-metal materials covarranty, express or implied, wit I and its subsidiaries are contain	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an to credible reason to believe that the unavoidable in tory scheme world-wide. 25. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to be tances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchi and belief, as	ond, to the besingurity concertion at the contract assection to xic mished parts.	t of Microchipentration of the est report at thing slip on the discount of the est report at the est r	with EU phe ne outer uctor ed cannot aw material raw reents.		(mg) Total Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
etive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the conology incorporated's knowledge and belief as of the hical substance, if any, is not below the threshold of reing compounds used by Microchip meet the UL94 Voi/ful.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Supplier information is often protected from distinct the completeness and accuracy of data in this featiers. Supplier information is often protected from distinct suppliers. Information is provided only as estimate estimates do not include trace levels of dopants, metaphip Technology Incorporated does not provide any santies provided by Microchip Technology Incorporated son theory of the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provide any santies provided by Microchip Technology Incorporated to the provided and the provi	via internal design controls, su hemical substance is NOT an in date of this document, there is r gulatory concern for any regula lammability standard for plastic als/plastics/ oped are made from polyvinyl cl on in this form concerning subsi ct to the best of its knowledge a rum because it has been compile closure as trade secrets and sor es of the average weight of thes tals, and non-metal materials co varranty, express or implied, wit and its subsidiaries are contain invoices. changes to Material Content Dec he users' reliance on the inform	otal Mass 25/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an no credible reason to believe that the unavoidable in tory scheme world-wide. s. You can access the UL iQTM family of databases hloride (PVC) plastic. "Window envelopes" used to be tances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchi and belief, as of the date listed in Material Safety I me information may not have been provided by sub- te parts and the average weight of anticipated signification did within silicon devices (silicon IC) in the fini- th respect to the information provided in this declar need in Microchip's standard terms and conditions o	oHS Recast Dind, to the besingurity concerts to obtain a to hold the pack in Theorem 1 Incorporated in Technolog Data Sheets proportion of the parts. It is shed parts. It is also the sale. These direct or indirect or indir	t of Microchipentration of the est report at hing slip on the dissemicond by remblers and retals comportations of the est	with EU phe ne outer uctor ed cannot aw material raw nents.	0.29	(mg) Total Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

SL 14 SOIC 7:13 PM : 8/8/2012

Semiconductor Device Type:	TF, F, OE, S(D, SL 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / DZ)		nation Base A pper Alloy (Cu	•		Package Homoge 8.1 Electronics (e.g. p		ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In" Sub-Component	% Total Weight			307.43	(mg) Total	Mold Compound	% ot Total	
Basic Substance	CAS Number	•		mg/part	ppm				Weight	1
Silica, vitreous	60676-86-0	Mold Compound Mold Compound	59.662 4.299	261.317 18.830	596,615 42.991		Silica, vitreous	60676-86-0	85.00	4
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret Trade Secret	Mold Compound Mold Compound	4.299	18.830	42,991		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	6.13 6.13	_
Epoxy, Cresol Novolac	29690-82-2	Mold Compound Mold Compound	1.720	7.532	17,197		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.211	0.922	2,106		Carbon Black		0.30	
Copper	7440-50-8	Lead Frame	25.499	111.685	254,990		Carbon black	Total	100.00	4
Соррег	7440-30-0	Lead Frame	25.455	111.005	234,330				% of Total	
Iron	7439-89-6	Lead Frame	0.627	2.747	6.272	116.90	(mg) Total	Lead Frame	Weight	
Silver	7440-22-4	Lead Frame	0.508	2.227	5,084		Copper	7440-50-8	95.54	ì
Zinc	7440-22-4	Lead Frame	0.033	0.146	334		Iron	7440-30-8	2.35	1
Phosphorous	7723-14-0	Lead Frame	0.033	0.096	220		Silver	7440-22-4	1.91	1
Silver	7440-22-4	Die Attach	0.370	1.621	3,700		Zinc	7440-66-6	0.13	-
Epoxy resin	Trade Secret	Die Attach	0.100	0.438	1,000		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.015	0.066	150		1 Hospilorous	Total	100.00	4
Wetai Oxide	Trade decret	DIE ALLACIT	0.013	0.000	130			1	% of Total	1
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150	2.19	(mg) Total	Die Attach	Weight	0.5
Silicon	7440-21-3	Chip (Die)	1.850	8.103	18,500		Silver	7440-22-4	74	1
Gold	7440-21-3	Wire Bond	0.090	0.394	900		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6.800		Metal oxide	Trade Secret	3	-
1111	7440-31-3	TOTALS:	100.000	438.000	1.000.000		Gamma-butyrolactone	96-48-0	3	
	0.4000	a Total Mass	100.000	430.000	1,000,000		Garrina-butyrolactorie	Total	100.00	4
pliance with the above EU Directives has been verified via intern hemical substance is absent from the list above, the chemical s porated's knowledge and belief as of the date of this document	substance is NOT nt, there is no cred	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce	•	•	٠,		Doped Silicon	7440-21-3 Total	100 100.00]
is not below the threshold of regulatory concern for any regulat ing compounds used by Microchip meet the UL94 V0 flammabil //ul.com/global/eng/pages/offerings/industries/chemicals/plastic	ility standard for p		to obtain a tes	t report at		0.39	(mg) Total	Wire Bond	% of Total Weight	
protective "tubes" in which the specific product is shipped are recentain "reels" may be made from PVC plastic.	made from polyvi	inyl chloride (PVC) plastic. "Window envelopes" used to h	old the packin	g slip on the o	uter box		Doped Gold	7440-57-5	100	
ochip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its keleteness and accuracy of data in this form because it has been slier information is often protected from disclosure as trade secrete.	knowledge and be n compiled based crets and some inf these parts and the	elief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract ass e average weight of anticipated significant toxic metals cc	gy Incorporate vided by raw r semblers and r	d cannot guar naterial suppli aw material su	antee the ers. ppliers.			Total	100.00	<u>.</u>
mation is provided only as estimates of the average weight of th de trace levels of dopants, metals, and non-metal materials con	mameu within Sili							Plating on		
	, express or implie					2.98	(mg) Total	external leads (pins) - Matte Tin / annealed at	% of Total Weight	
de trace levels of dopants, metals, and non-metal materials con ochip Technology Incorporated does not provide any warranty, anties provided by Microchip Technology Incorporated and its s	, express or implie subsidiaries are c s to Material Conte	contained in Microchip's standard terms and conditions of	sale. These ar	e provided in l	Microchip's	2.98	(mg) Total	external leads (pins) - Matte Tin		1 0.68

TF F OE SO SL 16 SOIC 7:13 PM: 8/8/2012

Semiconductor Device Typ	e: SL 16 (Lead)	SOIC (Small Outline - 150mil) (D7 / DV)		nation Base A pper Alloy (C	. ,			ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			60.00	(mg) Total	Mold Compound	% ot Total Weight	38.12
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	00.00	(3,			30.12
Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	324,020		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9,339		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.114	0.180	1,144		Carbon Black	1333-86-4	0.30	ļ
Copper	7440-50-8	Lead Frame	24.276	38.211	242,761			Total	100.00	
Iron	7439-89-6	Lead Frame	0.597	0.940	5,971	40.00	(mg) Total	Lead Frame	% of Total Weight	25.41
Silver	7440-22-4	Lead Frame	0.484	0.762	4,841		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.032	0.050	318		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.021	0.033	210		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	2.618	4.120	26,175		Zinc	7440-66-6	0.13	
Diester Resin	94-80-4	Die Attach	0.524	0.824	5,235		Phosphorous	7723-14-0	0.08	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745			Total	100.00	1
Epoxy Resin	9003-36-5	Die Attach	0.087	0.137	873	5.49	(mg) Total	Die Attach	% of Total Weight	3.49
Epoxy Resin	13561-08-5	Die Attach	0.087	0.137	873		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	3.180	5.005	31.800		Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	1,210	1.905	12,100	Fun	ctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	28,590	45.001	285.900		Epoxy Resin	9003-36-5	3	
	7 1 10 0 1 0	TOTALS:	100.000	157,400	1.000.000		Epoxy Resin	13561-08-5	3	
		g Total Mass			,,	5.01	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	3.18
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via memical substance is absent from the list above, the chem tology Incorporated's knowledge and belief as of the date	ply with EU Directive internal design con ical substance is No of this document, t	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable	(RoHS Recast	Directive) and	i with EU	5.01		Total	100.00	3.18
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via memical substance is absent from the list above, the chem tology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam	ply with EU Directive internal design con ical substance is No of this document, to tory concern for an inability standard for inability stand	g Total Mass //e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devicthere is no credible reason to believe that the unavoidably regulatory scheme world-wide.	(RoHS Recast	Directive) and est of Microch ncentration of	ip	5.01	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	3.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem nology incorporated's knowledge and belief as of the date hical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flami/ful.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped	ply with EU Directivinternal design con ical substance is No of this document, to tory concern for an mability standard folastics/	g Total Mass /e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device, here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	(RoHS Recast e and, to the b le impurity con	Directive) and est of Microch ncentration of a test report at	d with EU		Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials comctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flami (//ul.com/global/eng/pages/offerings/industries/chemicals/rprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form berial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warra	ply with EU Directivinternal design con ical substance is No of this document, to tory concern for an mability standard follastics/ are made from pol this form concerning the best of its knowecause it has been disclosure as trades of the average wand non-metal materially, express or imparts.	g Total Mass //e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used and substances restricted by RoHS in Microchip Technologied and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been proved in the separation of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the otied, with respect to the information provided in this device, with respect to the information provided in this deviced.	e and, to the ble impurity conses to obtain a to hold the part ochip Technol ty Data Sheets ided by succeed is ginificated to significate to finished parts claration. The	est of Microch icentration of a test report at acking slip on ted's semicon ogy Incorpora is provided by portract assemi oxic metals co is.	the outer ductor ted cannot raw blers and mponents.	1.90	Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	1.21
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via themical substance is absent from the list above, the chem anology Incorporated's knowledge and belief as of the date inical substance, if any, is not below the threshold of regula ling compounds used by Microchip meet the UL94 V0 flami //ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form brial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warra fuct warranties provided by Microchip Technology Incorpor icrochip's quotations, sales order acknowledgement, and is ochip disclaims any duty to notify users of updates or char rwise, suffered by users or third parties as a result of the ur	ply with EU Directivinternal design con ical substance is No of this document, to tory concern for an mability standard for lastics/ are made from pol this form concerning the best of its knowecause it has been disclosure as trades of the average wand non-metal materially, express or impated and its subsidiation in the services.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device, there is no credible reason to believe that the unavoidable y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databate yivinyl chloride (PVC) plastic. "Window envelopes" used the substances restricted by RoHS in Microchip Technology will be secrets and some information may not have been provided as esecrets and some information may not have been provided in these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the solied, with respect to the information provided in this deliaries are contained in Microchip's standard terms and other the Declarations and shall not be liable for any damage weight of any damage weight of any of the second of the s	e and, to the ble impurity coruses to obtain a to hold the pa ogy Incorporatochip Technol oty Data Sheets ided by subcod significant to finished parts claration. The conditions of ses, direct or in-	est of Microch neentration of a test report at acking slip on ted's semicon ogy Incorpora is provided by outract assemi oxic metals co. acking slip on exclusive, liminale. These are	ip the outer ductor raw blers and mponents.		Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight	
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via the mical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date itical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flami (/ul.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Sochip Technology Incorporated believes the information in less in their original packing materials is true and correct to antee the completeness and accuracy of data in this form I rial suppliers. Supplier information is often protected from naterial suppliers. Information is provided only as estimate e estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warraute provided by Microchip Technology Incorporated to the provide and corporated process of updates or characterial suppliers, sales order acknowledgement, and in order in the provide of the provide or characterial suppliers and due the deep order	ply with EU Directivinternal design con ical substance is No of this document, to tory concern for an mability standard for lastics/ are made from pol this form concerning the best of its knowecause it has been disclosure as trades of the average wand non-metal materially, express or impated and its subsidiation in the services.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device, there is no credible reason to believe that the unavoidable y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databate yivinyl chloride (PVC) plastic. "Window envelopes" used the substances restricted by RoHS in Microchip Technology will be secrets and some information may not have been provided as esecrets and some information may not have been provided in these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the solied, with respect to the information provided in this deliaries are contained in Microchip's standard terms and other the Declarations and shall not be liable for any damage weight of any damage weight of any of the second of the s	e and, to the ble impurity coruses to obtain a to hold the pa ogy Incorporatochip Technol oty Data Sheets ided by subcod significant to finished parts claration. The conditions of ses, direct or in-	est of Microch neentration of a test report at acking slip on ted's semicon ogy Incorpora is provided by outract assemi oxic metals co. acking slip on exclusive, liminale. These are	ip the outer ductor raw blers and mponents.	1.90	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	1.21

SL 16 SOIC 7:13 PM : 8/8/2012

Semiconductor Device Typ		F. D. Mar. 200. 10 /Fe /F. D.		ation Base A oper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e. 30 18 (Lead) SOIC (W									es
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	383.84	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	326.262	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	9.404	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	1.152	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	48.251	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	1.187	2,468	50.51	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.962	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.063	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	2.706	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.505	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.271	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.126	263	3.61	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75,000		Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.962	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5 Plating on	external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.013	12,500	Digl	ycidylether of bisphenol-F	54208-63-8	8	
	•	TOTALS:	100.000	481.000	1,000,000		Modified Amine	827-43-0	4	
semiconductor device and its homogenous materials comp	0.4810 g Tota		Dalle Dagget D	ireative) and :	wish Ell			Total	100.00	
pliance with the above EU Directives has been verified via in	nternal design controls, supr				ſ					i
nemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is a soft the date of th	cal substance is NOT an inte	ntional ingredient in the semiconductor device	,				Doped Silicon	7440-21-3 Total	100	
· · · · · · · · · · · · · · · · · · ·	cal substance is NOT an inter of this document, there is no ern for any regulatory scheme nability standard for plastics.	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable e world-wide.	impurity conc	entration of th		0.96	Doped Silicon (mg) Total			0.2
nology Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory conce ng compounds used by Microchip meet the UL94 V0 flamm	cal substance is NOT an intendent of this document, there is no ten for any regulatory scheme nability standard for plastics.	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable e world-wide. You can access the UL iQTM family of database	impurity conc	entration of the	e chemical	0.96	·	Total	100.00	0.2
nology Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory conce ng compounds used by Microchip meet the UL94 V0 flamm /ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped	cal substance is NOT an interest of this document, there is no ern for any regulatory scheme ability standard for plastics. lastics/ are made from polyvinyl chlother this form concerning substant the best of its knowledge and ecause it has been compiled as trade secrets and some age weight of these parts and gree weight of these parts and gree weight of these parts and some age weight of these parts and	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable e world-wide. You can access the UL iQTM family of database or ide (PVC) plastic. "Window envelopes" used to note restricted by RoHS in Microchip Technolog d belief, as of the date listed in this form. Microchased on the ranges provided in Material Safety information may not have been provided by suit the average weight of anticipated significant to	impurity conc es to obtain a t o hold the pack gy Incorporate thip Technolog of Data Sheets p blocontract asso xic metals con	est report at king slip on th d's semicond y Incorporate provided by ra emblers and r	e outer box uctor d cannot w material aw material	0.96	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.2
nology Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/plorotective "tubes" in which the specific product is shipped ertain "reels" may be made from PVC plastic. Chip Technology Incorporated believes the information in the interioring place in their original packing materials is true and correct to intee the completeness and accuracy of data in this form biliers. Supplier information is often protected from disclosuliers. Information is provided only as estimates of the average in the content of the average in the complete of the average in the content of the content of the average in the content of	cal substance is NOT an inter- of this document, there is no ern for any regulatory scheme hability standard for plastics. lastics/ are made from polyvinyl chlo this form concerning substant the best of its knowledge and ecause it has been compiled are as trade secrets and some tage weight of these parts and on-metal materials contained htty, express or implied, with its subsidiaries are containe	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable e world-wide. You can access the UL iQTM family of database or ide (PVC) plastic. "Window envelopes" used to the semicondient of t	impurity conc es to obtain a t o hold the pack gy Incorporate chip Technolog v Data Sheets p ibcontract ass xic metals con parts.	entration of the est report at sing slip on the d's semicondi yl Incorporate orovided by raemblers and raponents. The sclusive, limite clusive, limite	e outer box uctor d cannot w material aw material see	0.96	(mg) Total Doped Gold	Total Wire Bond 7440-57-5	% of Total Weight	
nology Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/plorotective "tubes" in which the specific product is shipped ertain "reels" may be made from PVC plastic. The chnology Incorporated believes the information in the single their original packing materials is true and correct to intee the completeness and accuracy of data in this form beliers. Supplier information is often protected from disclosuliers. Information is provided only as estimates of the averages do not include trace levels of dopants, metals, and no chip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and	cal substance is NOT an inter- of this document, there is no ern for any regulatory scheme hability standard for plastics. hastics/ are made from polyvinyl chlo this form concerning substanthe best of its knowledge an- ecause it has been compiled re as trade secrets and some age weight of these parts and n-metal materials contained htty, express or implied, with its subsidiaries are containe ices. ges to Material Content Decla ers' reliance on the informat	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable e world-wide. You can access the UL iQTM family of database or deep control of the control	impurity concess to obtain a to be hold the package of the package	est report at king slip on the d's semicondi y Incorporate provided by ramblers and rapponents. The colusive, limit are provided	e outer box uctor d cannot w material aw material ese ed product in		(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00	

SO 18 SOIC 7:13 PM : 8/8/2012

Semiconductor Device Type	e: SO 20 (Lea	d) SOIC (Wide Outline - 300mil) (G5 / GS)		nation Base A			•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Connectination Device Type	0. 00 20 (200	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	389.37	(mg) Total	Mold Compound	% ot Total Weight	71.84
Silica, vitreous	60676-86-0	Mold Compound	61.064	330.967	610.640		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine. No diantimony trioxide)	Trade Secret	Mold Compound	4,400	23.849	44,002		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44,002		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.760	9.540	17,601		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.216	1.168	2,155		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	24.735	134.062	247.347			Total	100.00	l
Iron	7439-89-6	Lead Frame	0.608	3.298	6,084	140.32	(mg) Total	Lead Frame	% of Total Weight	25.89
Silver	7440-22-4	Lead Frame	0.493	2.673	4.932	140.32	Copper	7440-50-8	95.54	25.05
Zinc	7440-66-6	Lead Frame	0.433	0.175	324		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.032	0.175	214		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.021	1.364	2.516		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.252	0.369	680		Phosphorous	7723-14-0	0.13	
1 2 2 2 2			0.008		102		Filospilolous			l
Metal oxide	Trade Secret 96-48-0	Die Attach Die Attach	0.010	0.055 0.055				Total	100.00	
Gamma-butyrolactone					102	1.84	(mg) Total	Die Attach	% of Total Weight	0.34
Silicon	7440-21-3	Chip (Die)	1.150	6.233	11,500		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.100	0.542	1,000		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	3.686	6,800		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	542.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
		g Total Mass	(RoHS Recast	Directive) and	d with EU	6.23	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	1.15
semiconductor device and its homogenous materials com ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i	ply with EU Directiv	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	6.23	Total (mg) Dope Silicon	Chip (Die) 7440-21-3	% of Total Weight	1.15
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via interesting the control of the determination of the date of	ply with EU Directive internal design consider the substance is No of this document, t	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device- here is no credible reason to believe that the unavoidable	e and, to the b	est of Microch	nip	6.23	1	Chip (Die)	% of Total Weight	1.15
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via i emical substance is absent from the list above, the chemi lology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flamn	ply with EU Directive internal design consider substance is No of this document, to tory concern for an anability standard for	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b le impurity co	est of Microch	nip the	6.23	1	Chip (Die) 7440-21-3	% of Total Weight	0.1
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive internal design consical substance is No of this document, tory concern for an ability standard for lastics/	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	e and, to the b le impurity co	est of Microch ncentration of a test report a	nip the		Dope Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in the control of the co	ply with EU Directivinternal design con- ical substance is No of this document, to tory concern for an mability standard fo lastics/ are made from pol this form concerni the best of its kno uecause it has been disclosure as trade so of the average we	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicements is no credible reason to believe that the unavoidable y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databact young the company of the co	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorpora ochip Technol sty Data Sheets vided by subco d significant to	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	t the outer ductor ated cannot raw blers and		Dope Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via it in the control of the	ply with EU Directive internal design consical substance is No of this document, to tory concern for an ability standard for lastics/ are made from polythis form concernite the best of its known ecause it has been disclosure as tradius of the average wand non-metal matunty, express or impated and its subsider.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device- here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technologied and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been pro- glight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the silied, with respect to the information provided in this de-	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorpora ochip Technol ety Data Sheet vided by subcu d significant to finished parts claration. The	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by notract assem oxic metals cos.	t the outer aductor ated cannot raw blers and omponents.		Dope Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified via its themical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regula ling compounds used by Microchip meet the UL94 V0 flamr (//ul.com/global/eng/pages/offerings/industries/chemicals/pprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Occhip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form berial suppliers. Supplier information is often protected from material suppliers. Provided only as estimate se estimates do not include trace levels of dopants, metals, occhip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated to the provide only incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provide any warrantics provided by Microchip Technology Incorporated to the provided by Microchip Technolog	ply with EU Directive internal design consical substance is No of this document, to tory concern for an ability standard for lastics/ are made from polythis form concerning the best of its known educause it has been disclosure as trades of the average we and non-metal maturity, express or impated and its subsidiaryoices.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaty or supplied to the provided in the form. Microchip Technology with the provided in the form. Microchip Technology is secrets and some information may not have been provided to these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the selied, with respect to the information provided in this delaries are contained in Microchip's standard terms and to the tent Declarations and shall not be liable for any damage tent in the content of the provided in Microchip's standard terms and to the tent Declarations and shall not be liable for any damage tent in the content of the provided in the detection of the provided in the declarations and shall not be liable for any damage tent in the content of the provided in the declarations and shall not be liable for any damage.	e and, to the b le impurity col uses to obtain to hold the pa ogy Incorpora ogothip Technol ty Data Sheet vided by subct d significant to finished parts claration. The conditions of s es, direct or in	est of Microch neentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem youtract assem os. exclusive, lim tale. These are	t the outer adductor raw blers and omponents.	0.54	Dope Silicon (mg) Total Dope Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.1

SO 20 SOIC 7:13 PM : 8/8/2012

MICROCHIP Semiconductor Device Typ	e: OG 24 (Lea	d) SOIC (Wide Outline - 300mil) (K3 / KS)		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
· · · · · · · · · · · · · · · · · · ·		"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	462.27	(mg) Total	Mold Compound	% ot Total Weight	69.83
Silica, vitreous	60676-86-0	Mold Compound	59.356	392.933	593,555		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42,771		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42,771		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.711	11.326	17,108		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.209	1.387	2,095		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.757	170.511	257,569			Total	100.00	
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336	178.48	(mg) Total	Lead Frame	% of Total Weight	26.96
Silver	7440-22-4	Lead Frame	0.514	3.400	5,136		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.034	0.223	337		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.326	2.155	3,256		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.013	0.087	132		·	Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.013	0.087	132	2.91	(mg) Total	Die Attach	% of Total Weight	0.44
Silicon	7440-21-3	Chip (Die)	2.010	13.306	20,100		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.090	0.596	900		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.670	4.435	6,700		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	662.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.6620	- Total Mass								
his semiconductor device and its homogenous materials com		g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	l with EU	13.31	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	2.01
his semiconductor device and its homogenous materials com- rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified via	ply with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	l with EU	13.31	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	2.01
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive internal design confical substance is NO of this document, the plant of the plant is the plant is the plant in the plant is the plant in th	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	ip	13.31		Chip (Die)	% of Total Weight	2.01
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date	ply with EU Directive internal design confical substance is NO of this document, the tory concern for an mability standard fo	to 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch	ip the	0.60		Chip (Die) 7440-21-3	% of Total Weight	2.01
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OG 24 SOIC 7:13 PM : 8/8/2012

Basic Substance	AICROCHIP Semiconductor Device Typ	e: SO & Ol 28 (Lead)	SOIC (Wide Outline - 300mil) (N3 / NN)		nation Base A oper Alloy (C	•		•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Assistantial Control of Control o			"Contained In"				614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
Epop Ream No Seminor							******	,	· ·		
Phenoic Resum Pols IT CLE SQCD, No distintrom (notice) Trade Scoret Mode Compound 1856 57.05 48.878											
Egovy, Create Horolate 2890-92-2 Mold Compround 1,955 1,5062 19,551 1,244 2,44 1,244											
Castron Black											
Copper											
Silver (A) 1749-99-0 Load Frame 0.202 1.541 2.000 1.00								Calbon black			
Silver 7440-02-4 Lead Frame 0.03 0.13 0.101 131 152 162 162 162 162 162 162 162 162 162 16							22.22				40.5
Zinc 7440-66-6 Lead Frame 0.013 0.101 131 Phosphorous 7721-14-0 Lead Frame 0.039 0.067 87 2 2 2 2 2 2 2 2 2							80.89				10.5
Phosphorous 7729-14-0 Lead Frame 0.009 0.067 87 Shere (Ap.) 7440-224 De Attlach 0.563 4.334 5,625 Dischard 13961-095 Dischard 14961-095 Dischard 1						-,					
Silver (An) 1364-1695 De Attach 1364-1695 De A											
Modified Epoxy Rean 13661-08-5 Die Attach 0.105 0.809 1,090 Digycylighter of EpischenoF 54208-53-8 Die Attach 0.056 0.028 0.202 253 Silicon 7440-21-3 Chip (Die) 7400 7400-21-3 Chip (Die) 7400-21-3 Chip (Die) 7000-21-3 Chip (Die											
Dijycjycjychyfender of bisphenoi-F 54208-63-8 Die Attach 0.056 0.433 563 Modified Amme 827-45-0 Die Attach 0.026 0.022 263 5.78 mog Total Die Attach 50,75 Siston 7.440-21-3 Chip (Die) 7.590 5.7780 75,000 The 7.440-31-5 Page on external lands (point) Mark Thy, amended at 197C by 1 tour 1.250 0.850 12,200 The 7.440-31-5 Page on external lands (point) Mark Thy, amended at 197C by 1 tour 1.250 0.850 12,200 Total Mass Total 1.250 0.850 12,200 Total Will be a substance in absent from the list above, the chemical substance is absent from the list above, the chemical substance is in Correllore and correlar receives "may be made from PCV plastic." Will now new ord-wides. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics, You can access the UL (QTM family of databases to obtain a test report at late original packing materials is true and correct to the best of the date of this document, there is not certainly exhaunt world-wides. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL (QTM family of databases to obtain a test report at molecular corrective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Total 100,00 Total 100,0											
Silicon 7440-21-3 Chip (Die) 7,500 5,780 75,000 7,780 75,000 7,780 7								Phosphorous			
Silicon 7440;21:3 Chip (Dia) 75,90 57,80 75,00 1 75,00											
Gold 7440-57-5 Wire Bond 7240-31-5 Pluting on external leading (peng): Marks To Flat 1900-00 770-4.00 1,000,000 770-400							5.78	(mg) Total			0.75
Tin T440-31-5 Paterg on external leasts (pred) - Matter Tin / precision at 150°C (por 1 hour 1.050.00 70.40 9.000 1.000.000 70.40.000 1.000.000 1.000.000 1.000.000 1.000.000											
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semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/95/EC (RoH-of-Life Vehicles (ELV) Directive). In plance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7440.21-3 100.00			TOTALS:	100.000	770.400	1,000,000		Modified Amine	827-43-0	4	
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India com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold T440-57-5 100	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	2/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	57.78		Chip (Die) 7440-21-3	% of Total Weight	7.5
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ses in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot intee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw it is suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited act warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. Tin Plating on external leads (pins) - Materini (and s(pins) - Materini (and s(pi	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via a memical substance is absent from the list above, the chem tology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regular	internal design controls, ical substance is NOT an of this document, there i tory concern for any regu	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devics no credible reason to believe that the unavoidabulatory scheme world-wide.	e and, to the bo	est of Microch	ip the	57.78		Chip (Die) 7440-21-3	% of Total Weight	7.5
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor es in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot intee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw rial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and naterial suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. e estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited cut warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided growing and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 Tin 7440-31-5 100.00	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via intermined in the list above, the chemical substance is absent from the list above, the chemical substance is an ending the list above, the chemical substance, if any, is not below the threshold of regulaing compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/pub.	internal design controls, ical substance is NOT an of this document, there i tory concern for any regunability standard for plas lastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devics no credible reason to believe that the unavoidabulatory scheme world-wide. stics. You can access the UL iQTM family of databa	e and, to the b le impurity con ses to obtain a	est of Microch acentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
tochip reciniology incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited 9.63 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / annealed at 15	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the chem hoology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamm://ul.com/global/eng/pages/offerings/industries/chemicals/pprotective "tubes" in which the specific product is shipped	internal design controls, ical substance is NOT an of this document, there i tory concern for any regunability standard for plas lastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devics no credible reason to believe that the unavoidabulatory scheme world-wide. stics. You can access the UL iQTM family of databa	e and, to the b le impurity con ses to obtain a	est of Microch acentration of a test report a	ip the		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Tin 7440-31-5 100.00 S) or of this Certificate of Compliance for semiconductor products.	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamm:://ul.com/global/eng/pages/offerings/industries/chemicals/ppprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. In their original packing materials is true and correct to rantee the completeness and accuracy of data in this form the certain suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate.	internal design controls, ical substance is NOT an of this document, there i tory concern for any regulability standard for plas lastics/ are made from polyvinyl this form concerning suithe best of its knowledguecause it has been compidisclosure as trade secres of the average weight.	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidabulatory scheme world-wide. stics. You can access the UL iQTM family of databatics. You can access the UL iQTM family of databatichloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safetes and some information may not have been provide these parts and the average weight of anticipate	e and, to the bile impurity coruses to obtain a to hold the pa ogy Incorporat ochip Technolity Data Sheets vided by subco d significant to	est of Microch icentration of itest report a cking slip on ed's semicon gy Incorpora provided by ntract assem wic metals cc	ip the the outer ductor ted cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
Total 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flammor/vl/ul.com/global/eng/pages/offerings/industries/chemicals/paptorective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in ices in their original packing materials is true and correct to trantee the completeness and accuracy of data in this form the interior suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimates estimates do not include trace levels of dopants, metals, prochip Technology Incorporated does not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provided by Microchip Technology Inco	internal design controls, ical substance is NOT an of this document, there is tory concern for any regunability standard for plas lastics/ are made from polyvinyl this form concerning suit the best of its knowledguecause it has been compulsicolosure as trade secros of the average weight and non-metal materials unty, express or implied, ated and its subsidiaries	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidabulatory scheme world-wide. stics. You can access the UL iQTM family of databatichloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safetes and some information may not have been provof these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this de	e and, to the bile impurity consess to obtain a to hold the pa ogy Incorporat ochip Technolity Data Sheets vided by subcod significant to finished parts claration. The	est of Microch icentration of itest report a cking slip on ed's semicon ogy Incorpora provided by ntract assem intract assem exclusive, lim	ip the the outer ductor ted cannot raw blers and mponents.	1.54	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2
	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamm: //ul.com/global/eng/pages/offerings/industries/chemicals/properties/chem	internal design controls, ical substance is NOT an of this document, there is tory concern for any reginability standard for plas lastics/ are made from polyvinyl this form concerning suithe best of its knowledguecause it has been compulsional disclosure as trade secros of the average weight and non-metal materials anty, express or implied, ated and its subsidiaries invoices. The series of the average weight are and its subsidiaries in the series of the average weight are greated and its subsidiaries in the series of the average weight.	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidabulatory scheme world-wide. stics. You can access the UL iQTM family of databatics. You can access the UL iQTM family of databatics and the semiconductor devices the control of the databatic con	e and, to the bile impurity consess to obtain a to hold the pa ogy incorporation ochip Technolity Data Sheets vided by subcod significant to finished parts claration. The conditions of sets, direct or incorporations and the conditions of sets, direct or incorporation of sets, and the set of the s	est of Microch icentration of itest report and cking slip on ed's semicon orgy Incorpora provided by intract assem exic metals con- exclusive, limitale. These are	ip the the outer ductor ted cannot raw blers and mponents. ited provided	1.54	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

SO SI 28 SOIC 7:13 PM : 8/8/2012

AICROCHIP Semiconductor Device	Type: SM,S2AE (08 (Lead) SOIC (Small Outline-208 mil) (C3)		nation Base opper Alloy (6	,		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	, , ,	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	99.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	84.381	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	6.080	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	6.080	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	2.432	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.298	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	12.479	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000		Copper	7440-50-8	95.54	
Zinc Phosphorous	7440-66-6 7723-14-0	Lead Frame Lead Frame	0.013	0.016 0.011	131 87		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Silver (Aq)	7440-22-4	Die Attach	0.009	0.700	5,625		Zinc	7440-22-4 7440-66-6	1.91 0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.565	0.700	1,050		Phosphorous	7723-14-0	0.13	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.103	0.131	563		Filospilolous	7723-14-0 Total	100.00	
Modified Amine	827-43-0	Die Attach	0.036	0.070	263	0.93	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75.000	0.93	(mg) Total Silver (Ag)	7440-22-4	% of Total Weight 75	0.75
Doped Gold	7440-21-3	Wire Bond	0.200	0.249	2.000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1,250	1.555	12.500	Di	alvoidvlether of bisphenol-F	54208-63-8	8	
	7440-31-3				12,500					
			100 000	124 400	1 000 000		Modified Amine			
		g Total Mass		124.400 t Directive) a	1,000,000 nd with EU	9.33	Modified Amine (mg) Total	827-43-0 Total Chip (Die)	4 100.00 % of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clandough Incorporated's knowledge and belief as of the control of the contr	comply with EU Directive via internal design contr nemical substance is NO late of this document, th	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	(RoHS Recas	t Directive) a	nd with EU	9.33		827-43-0 Total	100.00	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of re ding compounds used by Microchip meet the UL94 Vo fi :://ul.com/global/eng/pages/offerings/industries/chemic:	comply with EU Directive via internal design control of the memical substance is NO late of this document, the gulatory concern for any lammability standard for als/plastics/	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database	(RoHS Recase and, to the le impurity co	t Directive) and the concentration of a test report	nd with EU chip of the	9.33	(mg) Total Doped Silicon (mg) Total	827-43-0 Total Chip (Die) 7440-21-3 Total Wire Bond	4 100.00 % of Total Weight 100 100.00 % of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of re ding compounds used by Microchip meet the UL94 Vo fi :://ul.com/global/eng/pages/offerings/industries/chemic:	comply with EU Directive via internal design control of the memical substance is NO late of this document, the gulatory concern for any lammability standard for als/plastics/	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database	(RoHS Recase and, to the le impurity co	t Directive) and the concentration of a test report	nd with EU chip of the		(mg) Total Doped Silicon	827-43-0 Total Chip (Die) 7440-21-3	4 100.00 % of Total Weight 100 100.00	
s semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified chemical substance is absent from the list above, the classification of the chology Incorporated's knowledge and belief as of the cemical substance, if any, is not below the threshold of religing compounds used by Microchip meet the UL94 V0 for/ful.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informationices in their original packing materials is true and correlated their original packing materials is true and correlated the completeness and accuracy of data in material suppliers. Supplier information is often protect area material suppliers. Information is provided only as an ponents. These estimates do not include trace levels of	via internal design controlled internal design controlled internal design controlled internal substance is NO lade of this document, the lade of this document, the lade of th	g Total Mass 2 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technolog ledge and belief, as of the date listed in this form. Micros been compiled based on the ranges provided in Mater ade secrets and some information may not have been ps weight of these parts and the average weight of anticip	e and, to the le impurity coses to obtain to hold the popular Technolal Safety Darorovided by south	at Edirective) and the concentration of a test report acking slip of ated's semicology Incorporate Sheets productor action and toxic metalogical actions are actions as a contract actions and toxic metalogical actions are actions as a contract actions as a contract actions are actions as a contract action actions as a contract actions are actions as a contract action actions as a contract action actions are actions as a contract action actions actions as a contract action action actions actions as a contract action actions action actions actio	nd with EU chip of the at n the outer onductor orated vided by ussemblers tals		(mg) Total Doped Silicon (mg) Total	827-43-0 Total Chip (Die) 7440-21-3 Total Wire Bond	4 100.00 % of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clandogy Incorporated's knowledge and belief as of the central substance, if any, is not below the threshold of reading compounds used by Microchip meet the UL94 V0 flo://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informationices in their original packing materials is true and corresponding to the completeness and accuracy of data in a material suppliers. Supplier information is often protect and material suppliers. Information is provided only as	via internal design control via internal design control memical substance is NO late of this document, the gulatory concern for any sammability standard for als/plastics/ ped are made from poly n in this form concernin ct to the best of its know this form because it has ted from disclosure as trestimates of the average if dopants, metals, and nevarranty, express or impl provated and its subsidia	g Total Mass 2 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ollos, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technologied and belief, as of the date listed in this form. Micros been compiled based on the ranges provided in Mater are several sund some information may not have been per weight of these parts and the average weight of anticipon-metal materials contained within silicon devices (silicied, with respect to the information provided in this decided, with respect to the information provided in this decided.	ROHS Recase and, to the le impurity coses to obtain to hold the popular pechip Technoal Safety Data provided by soated signific con IC) in the claration. The	est of Microro oncentration of a test report acking slip o ated's semico logy Incorpo ta Sheets pro subcontract a ant toxic met e finished par	nd with EU chip of the at n the outer onductor rated vided by issemblers tals rts. mited		(mg) Total Doped Silicon (mg) Total Doped Gold (mg) Total	827-43-0 Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	4 100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clandogy Incorporated's knowledge and belief as of the central substance, if any, is not below the threshold of re iding compounds used by Microchip meet the UL94 V0 flor/ful.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information rices in their original packing materials is true and corre into guarantee the completeness and accuracy of data in y material suppliers. Supplier information is often protect are material suppliers. Information is provided only as inponents. These estimates do not include trace levels of prochip Technology Incorporated does not provide any w duct warranties provided by Microchip Technology Inco	via internal design control via internal design control via internal design control via internal substance is NO diate of this document, the gulatory concern for any ammability standard for als/plastics/ ped are made from poly no in this form concerning to the best of its know this form because it has ted from disclosure as the estimates of the average of dopants, metals, and no carranty, express or implicational via consideration of the consider	g Total Mass e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technologie deagned belief, as of the date listed in this form. Micros been compiled based on the ranges provided in Mater adde secrets and some information may not have been been judgith of these parts and the average weight of anticipon-metal materials contained within silicon devices (silicied, with respect to the information provided in this decarties are contained in Microchip's standard terms and centre are contained in Microchip's standard terms and centre to be contained and shall not be liable for any damage	e and, to the I e impurity co ses to obtain to hold the p ogy Incorpora schip Techno ial Safety Da orovided by s anted signific con IC) in the claration. The onditions of	pest of Microconcentration of a test report acking slip of ated's semicology Incorporate Sheets prosubcontract a faint toxic met a finished part of a exclusive, list and trace and addrect, conse	nd with EU chip of the at n the outer onductor orated vided by ussemblers tals rts. mited are provided equential or	0.25	(mg) Total Doped Silicon (mg) Total Doped Gold (mg) Total	827-43-0 Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	4 100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00 100.00	0.2

SM S2AE 08 SOIC 7:14 PM : 8/8/2012

ICROCHIP				nation Base A				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Produ Marking and/or Pkg. Labeling
Semiconductor Device Type	e: CB and NB and TT	03 (Lead) SOT-23 (C6 / CV / M7)								e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	6.62	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	5.630	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.162	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	0.833	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.020	2,468	0.87	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.017	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.001	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.047	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.009	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.005	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.002	263	0.06	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	0.623	75.000		Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.017	2.000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5 Plating	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1,250	0.104	12.500	Dio	glycidylether of bisphenol-F	54208-63-8	8	
•••		TOTALS:	100.000	8.300	1.000.000	,	Modified Amine	827-43-0	4	
	0.0083 g To	stal Mace			,,			Total	100.00	
semiconductor device and its homogenous materials com tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i	. ,	, , ,	(RoHS Recast	Directive) and	d with EU	0.62	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
etive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above.	internal design controls, sical substance is NOT an	supplier declarations, and /or analytical test data.	e and, to the b	est of Microch	ıip	0.62			1	7.5
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chive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flamm (ful.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Techip Technology Incorporated believes the information in their original packing materials is true and correct to antee the completeness and accuracy of data in this form be rial suppliers. Information is often protected from naterial suppliers. Information is provided only as estimate e estimates do not include trace levels of dopants, metals, exchip Technology Incorporated does not provide any warra uct warranties provided by Microchip Technology Incorpor crochip's quotations, sales order acknowledgement, and in which glisclaims any duty to notify users of updates or chan wise, suffered by users or third parties as a result of the users.	internal design controls, sical substance is NOT an of this document, there is tory concern for any regunability standard for plas lastics/ are made from polyvinyl this form concerning substance is the best of its knowledge because it has been compulisclosure as trade secros of the average weight cand non-metal materials inty, express or implied, vated and its subsidiaries to sers' reliance on the inforest control of the service is not reliable to the service in the service is not reliance to t	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidable allatory scheme world-wide. tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used obstances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safets and some information may not have been proved these parts and the average weight of anticipated contained within silicon devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and collectarations and shall not be liable for any damage	e and, to the be impurity consess to obtain a to hold the party long limited by substituted by substituted by substituted by fail of the finished party long limited by substituted by substituted by substituted by substituted by substituted by substituted by substitute	est of Microch centration of a test report at acking slip on ted's semicon ogy Incorpora s provided by portract assem poxic metals co acceptance of the contract acceptance of the cont	the outer ductor ted cannot raw blers and mponents. ited provided	0.02	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.2
pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the cheminology Incorporated's knowledge and belief as of the date it all substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The productive "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The productive the completeness and accuracy of data in this form brial suppliers. Supplier information is often protected from naterial suppliers. Information is provided only as estimate e estimates do not include trace levels of dopants, metals, whip Technology Incorporated does not provide any warra uct warranties provided by Microchip Technology Incorporated to show the provided procochip's quotations, sales order acknowledgement, and in stochip disclaims any duty to notify users of updates or chance in the provide of the procochip's contains any duty to notify users of updates or chance in the provided on the provided of the procochip's contains any duty to notify users of updates or chance in the procochip's quotations and the procochip	internal design controls, sical substance is NOT an of this document, there is tory concern for any regunability standard for plas lastics/ are made from polyvinyl this form concerning substance is the best of its knowledge because it has been compulisclosure as trade secros of the average weight cand non-metal materials inty, express or implied, vated and its subsidiaries to sers' reliance on the inforest control of the service is not reliable to the service in the service is not reliance to t	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidable allatory scheme world-wide. tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used obstances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Safets and some information may not have been proved these parts and the average weight of anticipated contained within silicon devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and collectarations and shall not be liable for any damage	e and, to the be impurity consess to obtain a to hold the party long limited by subsection of section of sections	est of Microch centration of a test report at acking slip on ted's semicon ogy Incorpora s provided by portract assem poxic metals co acceptance of the contract acceptance of the cont	the outer ductor ted cannot raw blers and mponents. ited provided	0.02	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100	0.2

CB NB TT 3 SOT-23 7:14 PM : 8/8/2012

ICROCHIP				nation Base pper Alloy (0				geneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Semiconductor Device Type	S2AF 08 (Lead)	SOIJ/SOIC .208in (4B) "Contained In"	% Total					-		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	89.96	(mg) Total	Mold Compound	% ot Total Weight	66.29
Silica, vitreous	60676-86-0	Mold Compound	56.347	76.462	563,465		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16,241		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1,989		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.540	36.015	265,403			Total	100.00	
Iron	7439-89-6	Lead Frame	0.653	0.886	6,528	37.70	(mg) Total	Lead Frame	% of Total Weight	27.78
Silver	7440-22-4	Lead Frame	0.529	0.718	5,292		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.035	0.047	347		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	0.221	1.628		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.007	0.009	66			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66	0.30	(mg) Total	Die Attach	% of Total Weight	0.22
Silicon	7440-21-3	Chip (Die)	5.410	7.341	54.100	0.30	Silver	7440-22-4	74	0.22
Gold	7440-21-3	Wire Bond	0.150	0.204	1.500					
Nickel	7440-57-5		0.150	0.204	1,500		Epoxy resin Metal oxide	Trade Secret	20	
		Plating on external leads (pins)(PPF)						Trade Secret	3	
Palladium	7440-05-03	Plating on external leads (pins)(PPF)	0.008	0.010	75		Gamma-butyrolactone	96-48-0	ū	
Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8			Total	100.00	
		TOTALS:	100.000	135.700	1,000,000	7.34	Total (mg)	Chip (Die)	% of Total Weight	5.41
	0.1357 a	Total Mass								
	y with EU Directive 200		/EU (RoHS Rec	ast Directive) and with EU		Doped Silicon	7440-21-3 Total	100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	•	2/95/EC (RoHS Directive), EU Directive 2011/65	•	ast Directive) and with EU	0.20	Doped Silicon (mg) Total			0.15
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemic ology Incorporated's knowledge and belief as of the date of	ternal design controls, al substance is NOT an f this document, there i	12/95/EC (RoHS Directive), EU Directive 2011/65 supplier declarations, and /or analytical test de intentional ingredient in the semiconductor de s no credible reason to believe that the unavoi	ata. evice and, to th	e best of Mic	rochip	0.20		Total	100.00	0.15
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemic ology Incorporated's knowledge and belief as of the date of cal substance, if any, is not below the threshold of regulatons compounds used by Microchip meet the UL94 V0 flammars.	ternal design controls, al substance is NOT an i this document, there is ory concern for any reg ability standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65 supplier declarations, and /or analytical test da intentional ingredient in the semiconductor does no credible reason to believe that the unavoiulatory scheme world-wide.	ata. evice and, to th dable impurity	e best of Mic concentratio	rochip on of the	0.20	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.15
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemic ology Incorporated's knowledge and belief as of the date of cal substance, if any, is not below the threshold of regulators compounds used by Microchip meet the UL94 V0 flammaul.com/global/eng/pages/offerings/industries/chemicals/plactotective "tubes" in which the specific product is shipped a	ternal design controls, al substance is NOT an f this document, there i rry concern for any reg ability standard for plas stics/	2/95/EC (RoHS Directive), EU Directive 2011/65 supplier declarations, and /or analytical test da intentional ingredient in the semiconductor da s no credible reason to believe that the unavoi ulatory scheme world-wide. stics. You can access the UL iQTM family of dat	evice and, to th dable impurity tabases to obta	e best of Mic concentratio	rochip on of the ort at	0.20	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.15
semiconductor device and its homogenous materials compitive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemicology Incorporated's knowledge and belief as of the date of ical substance, if any, is not below the threshold of regulatoring compounds used by Microchip meet the UL94 V0 flamma (ul.com/global/eng/pages/offerings/industries/chemicals/playrotective "tubes" in which the specific product is shipped a not certain "reels" may be made from PVC plastic. Chip Technology Incorporated believes the information in the interioriginal packing materials is true and correct to to the guarantee the completeness and accuracy of data in this interiorial suppliers. Supplier information is often protected from waterial suppliers. Information is provided only as estimonents. These estimates do not include trace levels of dopage.	ternal design controls, al substance is NOT and this document, there in the concern for any reg ability standard for plassics/ re made from polyviny hais form concerning such best of its knowledgorm because it has become disclosure as trade ates of the average we	supplier declarations, and /or analytical test da intentional ingredient in the semiconductor da s no credible reason to believe that the unavoi ulatory scheme world-wide. It chloride (PVC) plastic. "Window envelopes" unbestances restricted by RoHS in Microchip Teche and belief, as of the date listed in this form. I en compiled based on the ranges provided in Miscordies and some information may not have bight of these parts and the average weight of a	ata. evice and, to th dable impurity tabases to obta used to hold the anology Incorp Microchip Tech Aaterial Safety I een provided b thicipated signi	e best of Mic concentration in a test report e packing slip prated's sem nology Incorpata Sheets p y subcontrac ficant toxic r	rochip on of the ort at on the outer iconductor porated orovided by ct assemblers netals		(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemic hology Incorporated's knowledge and belief as of the date of ical substance, if any, is not below the threshold of regulate higher or	ternal design controls, al substance is NOT and this document, there irry concern for any reg ability standard for plassics/ re made from polyviny his form concerning such e best of its knowledgrorm because it has beyond disclosure as trade attes of the average we unts, metals, and non-nuty, express or implied, ted and its subsidiaries	supplier declarations, and /or analytical test da intentional ingredient in the semiconductor da no credible reason to believe that the unavoiulatory scheme world-wide. Stics. You can access the UL iQTM family of data of the companient of the co	ata. evice and, to the dable impurity tabases to obtate is a control of the data is a control o	e best of Mic concentration in a test report e packing slip prated's sem nology Incorporate Sheets p y subcontractificant toxic rethe finished	rochip on of the ort at con the outer iconductor porated orovided by tt assemblers netals parts.		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF)	100.00 % of Total Weight 100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via in Iliance with the above EU Directives has been verified via in Iliance with the above EU Directives has been verified via in Iliance with the above EU Directives has been verified via in Iliance with the chemic Iliance with the should ge and belief as of the date of Ical substance, if any, is not below the threshold of regulate Ing compounds used by Microchip meet the UL94 VO flamme Iliance with the UL94 VO flamme Iliance with the specific product is shipped a Ind certain "reels" in which the specific product is shipped a Ind certain "reels" may be made from PVC plastic. In their original packing materials is true and correct to the Internation is often protected from the provide only as estime In the simple of the provided only as estime In the simple of the provided only as estime In the simple of the provided only as estime In the simple of the provided only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the provide only as estime In the simple of the simple of the provide only as estime In the simple of the provide only as estime In the simple of the simple of the provide only as estime In the simple of the simple of the provide only as estime In the simple of the simple of the simple of the provide only as estime In the simple of	ternal design controls, al substance is NOT and this document, there is ry concern for any reg ability standard for platistics/ re made from polyviny this form concerning such best of its knowledg form because it has below disclosure as trade ates of the average we ints, metals, and non-ruty, express or implied, ted and its subsidiaries it, and invoices.	supplier declarations, and /or analytical test distinctional ingredient in the semiconductor displayed in the semiconductor	ata. evice and, to the dable impurity tabases to obtate tabases to obtate tabases to hold the anology incorpi Microchip Tech Material Safety I eeen provided be tricipated signific (silicon IC) in a declaration. To ind conditions anages, direct on nages, direct on ages, direct on ages, direct on ages, direct on a dable in the da	e best of Micconcentration in a test report e packing slip orated's sem nology Incor Data Sheets p y subcontract ficant toxic r the finished if he exclusive of sale. Thes	rochip in of the on the outer iconductor porated provided by tt assemblers netals parts. i, limited e are insequential		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF)	100.00 % of Total Weight 100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemicology Incorporated's knowledge and belief as of the date of cal substance, if any, is not below the threshold of regulatoring compounds used by Microchip meet the UL94 V0 flammaul.com/global/eng/pages/offerings/industries/chemicals/plactotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information in the inteir original packing materials is true and correct to the guarantee the completeness and accuracy of data in this laterial suppliers. Supplier information is often protected fire we material suppliers. Information is provided only as estimated the completeness and accuracy of data in this laterial suppliers. Information is provided only as estimaterial suppliers. These estimates do not include trace levels of dopactic process of the provided and the provided only incorporated does not provide any warranct warranties provided by Microchip Technology Incorporated in Microchip's quotations, sales order acknowledgements thip disclaims any duty to notify users of updates or changerwise, suffered by users or third parties as a result of the technology incorporatives, suffered by users or third parties as a result of the technology incorporatives, suffered by users or third parties as a result of the technology incorporatives.	ternal design controls, al substance is NOT and this document, there is ry concern for any reg ability standard for platistics/ re made from polyviny this form concerning such best of its knowledg form because it has below disclosure as trade ates of the average we ints, metals, and non-ruty, express or implied, ted and its subsidiaries it, and invoices.	supplier declarations, and /or analytical test distinctional ingredient in the semiconductor displayed in the semiconductor	ata. evice and, to the dable impurity tabases to obtate tabases to obtate tabases to hold the anology incorpi Microchip Tech Material Safety I eeen provided be tricipated signific (silicon IC) in a declaration. To ind conditions anages, direct on nages, direct on ages, direct on ages, direct on ages, direct on a dable in the da	e best of Micconcentration in a test report e packing slip orated's sem nology Incor Data Sheets p y subcontract ficant toxic r the finished if he exclusive of sale. Thes	rochip in of the on the outer iconductor porated provided by tt assemblers netals parts. i, limited e are insequential		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	

Semiconductor Device Typ	o. CT . OT 0	F # # COT 22		nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e: Cland Ol U	"Contained In"	% Total	1	1			1		63
Basic Substance	CAS Number	Sub-Component	% i otai Weight	mg/part	ppm	9.42	(mg) Total	Mold Compound	% ot Total Weight	63.21
Silica, vitreous	60676-86-0	Mold Compound	53.729	8.006	537.285		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38.716		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.549	0.231	15.486		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.190	0.028	1.896		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.037	4.029	270.371			Total	100.00	<u> </u>
Iron	7439-89-6	Lead Frame	0.665	0.099	6.651	4.22	(mg) Total	Lead Frame	% of Total Weight	28.3
Silver	7440-22-4	Lead Frame	0.539	0.080	5.391	4.22	Copper	7440-50-8	95.54	20.3
Zinc	7440-66-6	Lead Frame	0.035	0.005	354		Iron	7439-89-6	2.35	1
Phosphorous	7723-14-0	Lead Frame	0.033	0.003	233		Silver	7439-89-6	1.91	
Metal oxide				0.003	8.448				0.13	
	Trade Secret	Die Attach	0.845				Zinc	7440-66-6		
Epoxy resins	Trade Secret	Die Attach	0.845	0.126	8,448		Phosphorous	7723-14-0	0.08	<u>J</u>
Glycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400			Total	100.00	
Curing / Hardener	Trade Secret	Die Attach	0.230	0.034	2,304	0.38	(mg) Total	Die Attach	% of Total Weight	2.56
Silicon	7440-21-3	Chip (Die)	3.170	0.472	31,700		Metal oxide	Trade Secret	33	
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400		Epoxy resins	Trade Secret	33	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200		Glycol ethers	Trade Secret	25	
		TOTALS:	100.000	14.900	1,000,000		Curing / Hardener	Trade Secret	9	
HANA / Material compilation	0.0149	g Total Mass					•	Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			(Directive, and	d with EU	0.47	Total (mg)	Chip (Die)	% of Total Weight	3.17
npliance with the above EU Directives has been verified via	•		•	·		0.47	Total (mg) Doped Silicon	7440-21-3	100	
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem nnology Incorporated's knowledge and belief as of the date	ical substance is NO of this document, t	DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	ıip	0.47	,	, , ,		
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flam!	ical substance is NO of this document, the story concern for an mability standard fo	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b	est of Microch	iip the	0.47	,	7440-21-3	100	
mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem chnology incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regular iding compounds used by Microchip meet the UL94 V0 flampo://ul.com/global/eng/pages/offerings/industries/chemicals/peprotective "tubes" in which the specific product is shipped	ical substance is NO of this document, to tory concern for an mability standard fo plastics/	DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	e and, to the b le impurity co	est of Microch ncentration of a test report at	ip the		Doped Silicon	7440-21-3 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula lding compounds used by Microchip meet the UL94 V0 flami p://ul.com/global/eng/pages/offerings/industries/chemicals/p e protective "tubes" in which the specific product is shipped x and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form I sterial suppliers. Supplier information is often protected from v material suppliers. Information is provided only as estimate ese estimates do not include trace levels of dopants, metals,	ical substance is No of this document, ti tory concern for an mability standard fo plastics/ are made from poly this form concernin the best of its kno because it has been d isclosure as trade es of the average we	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databayvinyl chloride (PVC) plastic. "Window envelopes" used not substances restricted by RoHS in Microchip Technol Wiedge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe e secrets and some information may not have been proveleight of these parts and the average weight of anticipate	e and, to the ble impurity columns to obtain to hold the particular to hold the hold t	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assemi oxic metals co	the the outer ductor tted cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total	100 100.00 % of Total Weight	0.74
mpliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula Iding compounds used by Microchip meet the UL94 V0 flami p://ul.com/global/eng/pages/offerings/industries/chemicals/fe protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form the terial suppliers. Supplier information is often protected from vices in their original packing material suppliers. Supplier information is often protected from vicerial suppliers. Supplier information is provided only as estimate vicerial suppliers.	ical substance is No of this document, ti tory concern for an mability standard fo plastics/ are made from poly this form concernin the best of its know because it has been disclosure as trade so of the average we and non-metal mat anty, express or imp ated and its subsid	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databayvinyl chloride (PVC) plastic. "Window envelopes" used the graph of the plastic of the date listed in this form. Microchip Technol wledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe escrets and some information may not have been provipiled these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the olied, with respect to the information provided in this detailed.	e and, to the ble impurity columns to obtain a to hold the particle of the par	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assemi oxic metals co	t the outer ductor ated cannot raw blers and inponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.74
mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flaming. In the complete of the discomposition of of the discompos	ical substance is No of this document, ti tory concern for an mability standard fo plastics/ are made from poly this form concernin the best of its know because it has been disclosure as trade the sof the average we and non-metal mat anty, express or imp arted and its subsid nvoices. The soft material Con- sers' reliance on the	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databay in the control of the contr	e and, to the ble impurity columns to obtain a let o hold the particular to finished partic	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assemi oxic metals co s. exclusive, lim sale. These are	the outer ductor sted cannot raw blers and imponents. ited e provided	0.11	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100	0.74
pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regular ing compounds used by Microchip meet the UL94 V0 flami //ul.com/global/eng/pages/offerings/industries/chemicals/rprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The protective tender in the receive set in the roriginal packing materials is true and correct to antee the completeness and accuracy of data in this form the receive set information in set in their original packing materials is true and correct to antee the completeness and accuracy of data in this form the relative suppliers. Information is often protected from material suppliers. Information is provided only as estimate estimates do not include trace levels of dopants, metals, exchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated corchip's quotations, sales order acknowledgement, and in orthip disclaims any duty to notify users of updates or charvise, suffered by users or third parties as a result of the u	ical substance is No of this document, ti tory concern for an mability standard fo plastics/ are made from poly this form concernin the best of its know because it has been disclosure as trade the sof the average we and non-metal mat anty, express or imp arted and its subsid nvoices. The soft material Con- sers' reliance on the	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databay in the control of the contr	e and, to the ble impurity columns to obtain a let o hold the particular to finished partic	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assemi oxic metals co s. exclusive, lim sale. These are	the outer ductor sted cannot raw blers and imponents. ited e provided	0.11	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.74

CT OT 5 SOT-23 7:14 PM : 8/8/2012

Basic Substance CAS Number Sub-Component Weight mighest ppm Sub-Component Weight mighest ppm Sub-Component Weight mighest ppm Sub-Component Weight mighest ppm Sub-Component First Substance Substanc	MICROCHIP Semiconductor Device	e Type: CT and OT 0	5 (Lead) SOT-23 (C7)		nation Base opper Alloy (geneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Silica, virtous			"Contained In"		mg/part	nnm	12.77	(mg) Total	Mold Compound	% ot Total Weight	79.8
Epony Rean			•					Silica vitraous	60676-86-0	85.00	
Private Read Trade Secret Mole Compound 1,658 7,72 48,873 February (Creed Northics 2009052-2 Mole Compound 1,658 1,055											
Epony, Crease Novales 1985 3313 19.551											
Cathon Black											
Copper											
Iron								Calbon black		0.00	
Silver 1744-022-4 Lead Frame 0.030 0.032 2.000 1											
Prophopous 7723-14-0 Leaf Frame 0.013 0.002 131	-						1.68				10.5
Phosphorous 772-14-0 Lead Frame 0.099 0.001 67 Shiret (Ag) 7440-22-4 Dia Attach 0.968 0.095 5.55 Modified Epox Ream 13561-05-5 Dia Attach 0.105 0.077 1.050 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.105 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.005 0.005 0.005 5.53 Dialycopherior of bisphanol-F 520-25-8 Dia Attach 0.005 0.											
Silver (Ag) 17440-22-4 Die Attach 0.058 0.090 5.825 Die Attach 0.105 Die O.017 1.006 Dipydrodykehrer of bisphenol-F 540308-63-8 Die Attach 0.056 0.000 583 0.000 1.000 77, 1.000 1.0											
Modified Eproy Resin 13661-08-5 Die Attach 0.056 0.017 1,050 0.009 563 Total Modified Armine 5524-83-0 Die Attach 0.056 0.009 563 0.004 263 0.004 263 0.026 1.004 263 0.026 0.004 263 0.00	Phosphorous		Lead Frame		0.001			Silver	7440-22-4	1.91	
Displacement of hisphenois 54208-63-8 Die Attach 0.056 0.009 563 Modified Anne 827-45-9 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.75 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.7	Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625		Zinc	7440-66-6	0.13	
Displacement of hisphenois 54208-63-8 Die Attach 0.056 0.009 563 Modified Anne 827-45-9 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.75 Die Attach 0.026 0.004 263 0.12 (ma) Total Die Attach 0.75 Die Attach 0.7	Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050		Phosphorous	7723-14-0	0.08	
Silicon 7440-21-3 Chip (Die) 7.500 1,200 75,000 2,20 1,200 75,000 75,000 75,0	Diglycidylether of hisphenol-F	54208-63-8	Die Attach	0.056	0.009	563		-	Total	100.00	
Silicon 7.440-27-3 Chip (Die) 7.500 1.200 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 1.200 7.500 7.500 1.200 7.500		000.0					0.12	(mg) Total			0.75
Doped Gold 7440-57-5 Wire Bond 0.032 2,000 Tin 7440-51-5 Palargo nearmal basic (por) - Mate Tin armasked at 150°C (por 1 hour 1.250 0.020 12,500 12,5							0.12				0.73
Tin 7440-31-5 Patergon centeral large (pres) - Mater Tin / arreaded at 150°C for 1 for 1.250 0.200 1.2500 0.000 1000,000 1											
Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directives as been verified via internal design controls, supplier declarations, and /or analytical test data. **Nemicial substance is absent from the list above, the chemical substance is in the origing and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the inical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. **Ining compounds used by Microchip meet the UL34 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at //ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ **protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. **Total 100.00 **Total Weight 7.5 **Doped Gold 7.440-21:3 100.00 **On Total Weight 7.5 **Doped Gold 7.440-57:5 100 **Doped Gold 7.440-											
O.0160 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives have been verified via internal design controls, supplier declarations, and /or analytical test data. Hemical substance is abosen from the list above, the chemical substance is ANOT an intentional ingredient in the semiconductor device and, to the best of Microchip incology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the incisal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. In go compounds used by Microchip meet the UL94 V9 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at or contain "reels" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold 7440-57-5 100 Doped Gold 7440-57-5 1	III	7440-31-5					D				
semiconductor device and its homogenous materials comply with EU Directive 2002/59/EC (RoHs Directive). EU Directive 2002/59/EC (RoHs Recast Directive) and with EU Directive 2002/59/EC (RoHs Directive). EU Directive) and with EU Directive 2002/59/EC (RoHs Directive). EU Directive) and seen verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7440-21-3 100.00				100.000	16.000	1,000,000		Modified Amine			
the 2002/53/EC (End-of-Life Vehicles (ELV) Directive). 1.20 (mg) Total 1		0.0160	g Total Mass						Total	100.00	
//ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold T440-57-5 100	pliance with the above EII Directives has been verific						20	(9)	Cnip (Die)	% of Total Weight	7.5
and certain "reels" may be made from PVC plastic. Doped Gold 7440-57-5 100	chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the	chemical substance is NOT e date of this document, the	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable						7440-21-3	100	7.5
ochip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor ces in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated by materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated by material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals ponents. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices. Ochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports S) or of this Certificate of Compliance for semiconductor products.	chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r ding compounds used by Microchip meet the UL94 VO	chemical substance is NOT e date of this document, the regulatory concern for any of flammability standard for	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	e impurity co	oncentration of	of the		Doped Silicon	7440-21-3 Total	100	
corochip's quotations, sales order acknowledgement, and invoices. Vannealed at 150°C for 1 hour	chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r lding compounds used by Microchip meet the UL94 V0 s://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is sh	chemical substance is NO1 e date of this document, the regulatory concern for any of flammability standard for icals/plastics/	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database.	e impurity co	a test report	of the		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
	chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r Iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemi e protective "tubes" in which the specific product is sh x and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and corranot guarantee the completeness and accuracy of data w material suppliers. Supplier information is often proted raw material suppliers. Information is provided only amponents. These estimates do not include trace levels erochip Technology Incorporated does not provide any	chemical substance is NO1 e date of this document, the regulatory concern for any 0 flammability standard for icals/plastics/ iipped are made from polyv iion in this form concerning rect to the best of its knowl in this form because it has ected from disclosure as tr as estimates of the average of dopants, metals, and no warranty, express or impli	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technolo ledge and belief, as of the date listed in this form. Micro is been compiled based on the ranges provided in Mater and secrets and some information may not have been to weight of these parts and the average weight of anticip in-metal materials contained within silicon devices (silicted, with respect to the information provided in this deci-	e impurity co ses to obtain to hold the p ogy Incorpora ochip Techno ial Safety Dai orovided by so pated signific con IC) in the	a test report acking slip o ated's semice actogy Incorpo ta Sheets pro subcontract a cant toxic met e finished par	at n the outer anductor rated vided by sssemblers tals rts. mited	0.03	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100 100.00	0.2
Total 100.00	chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r Iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is she and certain "reels" may be made from PVC plastic. erochip Technology Incorporated believes the informativices in their original packing materials is true and corront guarantee the completeness and accuracy of data or material suppliers. Supplier information is often prote of raw material suppliers. Information is provided only amponents. These estimates do not include trace levels except Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any fuccorchip's quotations, sales order acknowledgement, excepting disclaims any duty to notify users of updates or terwise, suffered by users or third parties as a result of	chemical substance is NOTe date of this document, the regulatory concern for any of flammability standard for icals/plastics/ ipped are made from polyviolen in this form concerning rect to the best of its knowl in this form because it has ected from disclosure as tras estimates of the average of dopants, metals, and not warranty, express or implicorporated and its subsidial and invoices.	T an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technoloc ledge and belief, as of the date listed in this form. Micro been compiled based on the ranges provided in Mater ade secrets and some information may not have been provided in the seminary of these parts and the average weight of anticipon-metal materials contained within silicon devices (silicity) in the seminary of the semina	e impurity co ses to obtain to hold the p ogy Incorpora ichip Techno ial Safety Dat provided by s pated signific con IC) in the claration. The onditions of	a test report acking slip o ated's semice logy Incorpo ta Sheets pro subcontract a ant toxic met e finished pai e exclusive, li sale. These a	of the at n the outer onductor rated vided by ssemblers tals trts. mited ure provided equential or	0.03	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight	0.2
10tal 100.00	chemical substance is absent from the list above, the incology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riting compounds used by Microchip meet the UL94 V0 [//ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatices in their original packing materials is true and cornot guarantee the completeness and accuracy of data material suppliers. Supplier information is often proteraw material suppliers. Supplier information is provided only a ponents. These estimates do not include trace levels ochip Technology Incorporated does not provide any fluct warranties provided by Microchip Technology Incirochip's quotations, sales order acknowledgement, ochip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of	chemical substance is NOTe date of this document, the regulatory concern for any of flammability standard for icals/plastics/ ipped are made from polyviolen in this form concerning rect to the best of its knowl in this form because it has ected from disclosure as tras estimates of the average of dopants, metals, and not warranty, express or implicorporated and its subsidial and invoices.	T an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technoloc ledge and belief, as of the date listed in this form. Micro been compiled based on the ranges provided in Mater ade secrets and some information may not have been provided in the seminary of these parts and the average weight of anticipon-metal materials contained within silicon devices (silicity) in the seminary of the semina	e impurity co ses to obtain to hold the p ogy Incorpora ichip Techno ial Safety Dat provided by s pated signific con IC) in the claration. The onditions of	a test report acking slip o ated's semice logy Incorpo ta Sheets pro subcontract a ant toxic met e finished pai e exclusive, li sale. These a	of the at n the outer onductor rated vided by ssemblers tals trts. mited ure provided equential or	0.03	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

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CROCHIP Somioondustes Device Tur	OT . OF	007.00		nation Base A	-		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device Typ	e: O1 05 (Lead									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	malnort		8.39	(mg) Total	Mold Compound	% ot Total Weight	49.38
Silica, vitreous		Mold Compound	41.973	mg/part 7.135	ppm		Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine, No diantimony trioxide)	60676-86-0 Trade Secret	Mold Compound	3.025	0.514	419,730 30,245		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.210	0.206	12.098		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.148	0.206	1,481		Carbon Black	1333-86-4	0.30	
							Carbon Black			<u>l</u>
Copper	7440-50-8	Lead Frame	40.919	6.956	409,187			Total	100.00	
Iron	7439-89-6	Lead Frame	1.007	0.171	10,065	7.28	(mg) Total	Lead Frame	% of Total Weight	42.83
Silver	7440-22-4	Lead Frame	0.816	0.139	8,159		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.054	0.009	535		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.035	0.006	353		Silver	7440-22-4	1.91	
Aluminum oxide	1344-28-1	Die Attach	0.106	0.018	1,059		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.193	0.033	1,925		Phosphorous	7723-14-0	0.08	
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.012	0.002	116			Total	100.00	_
Silicon	7440-21-3	Chip (Die)	4.380	0.745	43,800	0.05	(mg) Total	Die Attach	% of Total Weight	0.31
Gold	7440-57-5	Wire Bond	0.430	0.073	4.300		Aluminum oxide	1344-28-1	34	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.670	0.454	26,700		Epoxy resin		62	
***		TOTALS:	100.000	17.000	1.000.000	Ar	nine (Trade Secret - 10039)		4	
					.,000,000	,				
emiconductor device and its homogenous materials comve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) an	d with EU	0.74	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	4.38
	ply with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.74	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.38
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem logy Incorporated's knowledge and belief as of the date al substance, if any, is not below the threshold of regula g compounds used by Microchip meet the UL94 V0 flam	ply with EU Directi internal design con ical substance is N of this document, i tory concern for an mability standard fo	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the bo	est of Microch	nip the	0.74	1	Chip (Die)	% of Total Weight	
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via imical substance is absent from the list above, the chem plogy incorporated's knowledge and belief as of the date ial substance, if any, is not below the threshold of regula g compounds used by Microchip meet the UL94 V0 flam il.com/global/eng/pages/offerings/industries/chemicals/potective "tubes" in which the specific product is shipped	ply with EU Directi internal design con ical substance is N of this document, tory concern for an mability standard for lastics/	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable by regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa	e and, to the bolle impurity consess to obtain a	est of Microch centration of test report a	nip the t		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directi internal design cor ical substance is N of this document, i tory concern for ar mability standard for lastics/ are made from po this form concerni the best of its kno because it has beer disclosure as trades of the average we	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicthere is no credible reason to believe that the unavoidable or gredients. You can access the UL iQTM family of databaty in the complete that the unavoidable or plastics. You can access the UL iQTM family of databaty in the complete that the unavoidable or plastics. You can access the UL iQTM family of databaty in the complete that the unavoidable or plastics. You can access the UL iQTM family of databaty in the complete (PVC) plastic. "Window envelopes" used in gsubstances restricted by RoHS in Microchip Technology which is the complete that the complete that the complete that the complete that the complete the secrets and some information may not have been proveleght of these parts and the average weight of anticipates.	e and, to the bile impurity consists to obtain a to hold the pa ogy Incorporat ochip Technolity Data Sheets vided by subco d significant to	est of Microch icentration of itest report a cking slip on ed's semicor gy Incorpora provided by ntract assem wice metals cc	t the outer ductor ated cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via emical substance is absent from the list above, the chem ology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula g compounds used by Microchip meet the UL94 V0 flam: ul.com/global/eng/pages/offerings/industries/chemicals/footective "tubes" in which the specific product is shipped d certain "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in s in their original packing materials is true and correct to tate the completeness and accuracy of data in this form I al suppliers. Supplier information is often protected from aterial suppliers. Information is provided only as estimat	ply with EU Directi internal design cor- ical substance is N of this document, i tory concern for ar mability standard for lastics/ are made from po this form concerni the best of its kno because it has been disclosure as trad wand non-metal ma unty, express or im ated and its subsice	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable yregulatory scheme world-wide. or plastics. You can access the UL iQTM family of databaty or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM famil	e and, to the bile impurity consess to obtain a to hold the pa ogy Incorporat ochip Technology Data Sheets vided by subcod significant to finished parts claration. The	est of Microch icentration of itest report a cking slip on ed's semicor ogy Incorpora provided by ntract assem intract assem intract assem	t the outer ductor raw blers and omponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via emical substance is absent from the list above, the chem ology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regule g compounds used by Microchip meet the UL94 V0 flam ul.com/global/eng/pages/offerings/industries/chemicals/g otective "tubes" in which the specific product is shipped id certain "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in s in their original packing materials is true and correct to the the completeness and accuracy of data in this form la suppliers. Supplier information is often protected from aterial suppliers. Information is provided only as estimat estimates do not include trace levels of dopants, metals, hip Technology Incorporated does not provide any warra- tt warranties provided by Microchip Technology Incorporated	ply with EU Directi internal design cor ical substance is N of this document, i tory concern for lastics/ are made from po this form concern the best of its kno because it has beer disclosure as trades of the average w and non-metal ma unty, express or im ated and its subsic rvoices. unges to Material Coi sers' reliance on th	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable yr regulatory scheme world-wide. Or plastics. You can access the UL iQTM family of databatory plastics. You can access the UL iQTM family of databatory limits of the complete of the comple	e and, to the bele impurity consess to obtain a to hold the pa ogy Incorporation ochip Technolety Data Sheets vided by subcoding in the condition. The conditions of set, direct or incess, direct or incess, direct or incess.	est of Microck acentration of a test report a cking slip on ed's semicor ogy Incorpora provided by intract assem poixic metals con exclusive, lim ale. These are	t the outer adductor raw blers and omponents.	0.07	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.43

OT 5 SOT-23 7:14 PM : 8/8/2012

MICROCHIP Control to Double Town				nation Base A				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	E: CH and OT (06 (Lead) SOT-23 (C8 / CZ)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.034	2.000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.338	0.057	3.375		Zinc	7440-66-6	0.13	
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375		Phosphorous	7723-14-0	0.08	
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750			Total	100.00	l
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.034	2.000	0.13	Epoxy resin	Trade Secret	45	0.73
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.034	12,500		Silicon dioxide	Trade Secret	45	
IIII	7440-31-3	TOTALS:	100.000	17.000	1.000.000		Curing / Hardener	Trade Secret	10	
			100.000	17.000	1,000,000		Curing / Hardener			
his semiconductor device and its homogenous materials com		g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1 28	Total (mg)	Total	100.00	7.5
This semiconductor device and its homogenous materials compirective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via i	ply with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.28	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv nternal design cont cal substance is NC of this document, tl	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	ıip	1.28	,	Chip (Die)	% of Total Weight	7.5
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via if a chemical substance is absent from the list above, the chemical substance is knowledge and belief as of the date	ply with EU Directive ternal design control of the control of this document, the concern for any concern for a	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU crols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab or regulatory scheme world-wide.	e and, to the b	est of Microch	iip the	0.03	,	Chip (Die) 7440-21-3	% of Total Weight	7.5
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via if a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemication of the date shemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamn	ply with EU Directive internal design control of the calculus and substance is NG of this document, the corporation of the corporation of the calculus and substantial of the calculus and sub	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU crols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	e and, to the belle impurity cor	est of Microch icentration of itest report a	iip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
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Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via it a chemical substance is absent from the list above, the chemical compounds is a solution of regular deficiency of the date of the chemical substance, if any, is not below the threshold of regular dolding compounds used by Microchip meet the UL94 V0 flamn they://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped lox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in levices in their original packing materials is true and correct to juarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from aw material suppliers. Information is provided only as estimate	nternal design cont cal substance is No of this document, the tory concern for any nability standard fol lastics/ are made from poly this form concernit the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat nty, express or imp ated and its subsidi	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU rols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaryinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technolyledge and belief, as of the date listed in this form. Microcmpiled based on the ranges provided in Material Safe secrets and some information may not have been provight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the slied, with respect to the information provided in this de	e and, to the bile impurity coruses to obtain a to hold the pa ogy Incorporat ochip Technolity Data Sheets vided by subcod significant to finished parts claration. The	est of Microch icentration of itest report a cking slip on ed's semicon ogy Incorpora provided by intract assem intract assem intract assem	t t the outer ductor ted cannot raw blers and mponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
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CH OT 6 SOT-23 NC 7:15 PM : 8/8/2012

AICROCHIP Semiconductor Device Type	: CH and OT 0	6 (Lead) SOT-23 (C8)		nation Base . pper Alloy (0				ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678.300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.831	48.878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.831	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	1.705	100.314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.034	2.000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625		Zinc	7440-66-6	0.13	
Silicon dioxide	7631-86-9	Die Attach	0.169	0.029	1,688		Phosphorous	7723-14-0	0.08	
Curing / Hardener	Trade Secret	Die Attach	0.019	0.003	188			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
Doped Gold	7440-57-5	Wire Bond	0.200	0.034	2.000		Epoxy resin	Trade Secret	75	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12.500		Silicon dioxide	7631-86-9	23	
		TOTALS:	100.000	17.000	1.000.000		Curing / Hardener	Trade Secret	3	
		g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (nd with EU	1.28	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intended the chamics chemical substance is absent from the list above, the chemics hnology Incorporated's knowledge and belief as of the date of	with EU Directive ernal design control Il substance is NOI this document, the	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (pls, supplier declarations, and /or analytical test data. If an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidable	(RoHS Recas	Directive) an	hip	1.28		Total	100.00	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ipliance with the above EU Directives has been verified via into themical substance is absent from the list above, the chemical incorporated's knowledge and belief as of the date of inical substance, if any, is not below the threshold of regulato ting compounds used by Microchip meet the UL94 V0 flamma	with EU Directive ernal design control I substance is NOT this document, the ry concern for any bility standard for	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (pls, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	RoHS Recas	Directive) and the contraction of the contraction o	hip f the	0.03	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical hinology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamma b://ul.com/global/eng/pages/offerings/industries/chemicals/pla	with EU Directive ernal design control substance is NOT this document, they concern for any bility standard for stics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (pols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databas	RoHS Recase and, to the keep impurity co	est of Microc ncentration of	hip f the		(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	
s semiconductor device and its homogenous materials complective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chology incorporated's knowledge and belief as of the date of semical substance, if any, is not below the threshold of regulato diding compounds used by Microchip meet the UL94 V0 flamma: b://ul.com/global/eng/pages/offerings/industries/chemicals/plate and certain "reels" may be made from PVC plastic. cochip Technology Incorporated believes the information in thices in their original packing materials is true and correct to the ordinate of the completeness and accuracy of data in this formaterial suppliers. Supplier information is often protected from the material suppliers. Information is provided only as estim ponents. These estimates do not include trace levels of dopa	with EU Directive ernal design control is substance is NOT this document, the concern for any billity standard for stics/ e made from polywis form concerning the best of its knowlorm because it has midisclosure as trates of the average	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (pols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database rinyl chloride (PVC) plastic. "Window envelopes" used to gubern substances restricted by RoHS in Microchip Technolo edge and belief, as of the date listed in this form. Micro been compiled based on the ranges provided in Materi ade secrets and some information may not have been p weight of these parts and the average weight of anticip	(RoHS Recas and, to the be impurity co ses to obtain to hold the pa ogy Incorpora schip Techno ial Safety Dat porovided by s pated signific	est of Microc ncentration of a test report. acking slip of ted's semico logy Incorpor a Sheets pro- ubcontract a ant toxic met	hip of the at on the outer Inductor rated vided by ssemblers als		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight	
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CH OT 06-SOT-23 NC 7:15 PM : 8/8/2012

Saic Substance	ICROCHIP				nation Base A oper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Basic Substance	Semiconductor Devic	e Type: OT 06 (Lead) SOT	Γ -23 (6A)								e4
Epox Renin Trade Secret Mod Compound 4,199 6,691 41,965 41,96	Basic Substance	CAS Number			mg/part	ppm	7.94	(mg) Total	Mold Compound	% ot Total Weight	48.26
Physiological	Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.021	6.748	410,210		Silica, vitreous (or fused)	60676-86-0	85.00	
Carbon Black											
Copper											
Proposition								Carbon Black			
Procephorous											
All minumum oxide 1344-28-1 De Attach 0.074 13 0.024 1.455 Epony resin 1740s Secret 1068 Mush 1 0.026 1 0.043 2.009 All minumum oxide 1740s Secret 1068 Mush 1 0.026 1 0.043 2.009 All minumum oxide 1740s Secret 1068 Mush 1 0.026 1 0.043 2.009 All 1740s Secret 1069 Mush 1 0.026 1 0.043 2.009 All 1740s Secret 1069 Mush 1 0.026 1 0.043 2.009 All 1740s Secret 1069 Mush 1 0.026 1 0.045 2.009 All 1740s Secret 1069 Mush 1 0.026 1 0.043 2.009 All 1740s Secret 1069 Mush 1 0.026 1 0.020 1 0.000 1 0.0							8.17				49.66
Alluminum codes 1344-261 Die Attach 0.143 0.024 1.455 Epony resisin Figory (edits) 177264-261 Die Attach 0.016 0.033 157 Die Attach 0.016 Die Attach 0											
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Amine (Trade Secret - 10039) (Trade Secret -											
Silcon 7.440-21-3 Chip (De) 1.090 0.179 10.000 0.07 (mg) Total De Atlach 1.56 (Foch Weight 0.42 Nickel 1.7440-05-6 Nickel 1.7440-05-0 Plating on external leads (pins) 0.431 0.071 4.308 (pincy 1.7440-05-0 Plating on external leads (pins) 0.431 0.071 4.308 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.000 0.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.000 0.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.000 0.001 4.70 (pincy 1.7440-05-0 Plating on external leads (pins) 0.015 0.002 1.000 0.001 4.70 (pincy 1.7440-05-0 Plating (pincy 1.744								Zinc (Metal)			
Nickel 7440-97-5 Palling on external leads (prins) 0.431 0.071 4.398 Palling on external leads (prins) 0.431 0.071 4.398 Palling on external leads (prins) 0.431 0.071 4.398 Palling on external leads (prins) 0.005 0.002 1.45 Palling on external leads (prins) 0.005 0.001 47 Palling on external leads (prins) 0.005 0.001 0.005 0.001 0.005 0.001 0.005 0.001 0.005											
Pallagum			1 \ /			-,	0.07				0.42
Palladium 7440-55-30 Plating on external leads (pins) 0.015 0.001 47 TOTALS: 100.000 16.450 1,000,000 O.0165 g Total Mass TOTALS: 100.000 16.450 1,000,000 O.0165 g Total Mass TOTALS: 100.000 16.450 1,000,000 O.0165 g Total Mass Doped Silcon 7440-213 100 Doped Silcon 7440-213 100 O.0165 g Total Mass O.0165 g Total Mass Doped Silcon 7440-213 100 O.0165 g Total Mass O.0165 g Total Mass Doped Silcon 7440-213 100 O.02 (mg) Total Wire Bond % of Total Weight 0.12 Learnical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology borated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if the semiconductor device and, to the best of Microchip Technology one on the semiconductor device and, to the best of Microchip Technology one on the semiconductor device and, to the best of Microchip Technology one on the semiconductor device and, to the best of Microchip Technology one on the semiconductor device and, to the best of Microchip Technology one on the semiconductor device and the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if the semiconductor device and the date of this document, there is no credible reason to believe that the unavoidable impurity concentration in the semiconductor devices in original passed fortening industries/chemicals/passed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/gassed/cerincipal/ga											
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0.0165 g Total Mass O.0165 g Total Mass O.017 Miss David Miss			3				Ar	ni <u>ne (Trade Secret - 10039)</u>			
O.165 g Total Mass emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU vie 2002/95/EC (End-of-Life Vehicles (ELV) Directive). Illiance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology borated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if not below the threshold of regulatory concern for any regulatory scheme world-wide. In go compounds used by Microchip meet the ULS4 V0 (Ilammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at UL comfiglobal/eng/pages/offerings/industries/chemicals/plastics/ in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box retain "reles" may be made from PVC plastic. Total 100.00 In the fine of the data believe the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee information is often protected from disclosure as trade secrets and some information in Material Safety Data Sheets provided by raw material suppliers, aution is provided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not te trace levels of dopants, metals, and non-metal materials containmount on any not have been provided in Microchip's standard terms and conditions of sale. These a	Gold	7440-57-5	3					-			
emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive). 100.00			TOTALS	: 100.000	16.450	1,000,000	0.18	Total (mg)	Chip (Die)	% of Total Weight	1.09
emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive), EU Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU 2021/95/EC (RoH-of-Life Vehicles (ELV) Directive). 100.02 (mg) Total 100.00 100.02		0.0165 a T	otal Macc								
g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at l.com/global/eng/pages/offerings/industries/chemicals/plastics/ tective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box train "reels" may be made from PVC plastic. 0.07	ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	s comply with EU Directive 2002	/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast Di	rective) and w	vith EU	0.02		Total	100.00	0.12
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated semiconductor devices ir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Ineition is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Ineition is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not let trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product noties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in chip's quotations, sales order acknowledgement, and invoices. Chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) (Gold) 7440-57-5 1.04	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) bliance with the above EU Directives has been verifient nemical substance is absent from the list above, the porated's knowledge and belief as of the date of this	comply with EU Directive 2002 d via internal design controls, s chemical substance is NOT an in	/95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device reason to believe that the unavoidable impurity or	e and, to the best	of Microchip	Technology	0.02	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.12
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nties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Palladium 7440-05-03 3.23 chip's quotations, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) (Gold) 7440-57-5 1.04	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified memical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 VO /ul.com/global/eng/pages/offerings/industries/chemi	comply with EU Directive 2002 d via internal design controls, s chemical substance is NOT an is document, there is no credible iny regulatory scheme world-wie flammability standard for plasticals/plastics/	/95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device reason to believe that the unavoidable impurity of dec. Ics. You can access the UL iQTM family of datab	e and, to the best oncentration of the	of Microchip the chemical s est report at	Technology ubstance, if		(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100	
wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) (Gold) 7440-57-5 1.04 this Certificate of Compliance for semiconductor products.	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified the memical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 VO (vul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shertain "reels" may be made from PVC plastic. Technology Incorporated believes the information original packing materials is true and correct to the ompleteness and accuracy of data in this form becautier information is often protected from disclosure at mation is provided only as estimates of the average of the succession of the suc	d via internal design controls, s chemical substance is NOT an indocument, there is no credible in y regulatory scheme world-wing regulatory scheme world-wing flammability standard for plasticals/plastics/ ipped are made from polyvinyl on in this form concerning subsections of its knowledge and belies it has been compiled based to trade secrets and some inform veight of these parts and the average of the secret in the	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devices on to believe that the unavoidable impurity of the common of the c	e and, to the best oncentration of the ses to obtain a to to hold the pack ogy Incorporated ichnology Incorpo- eets provided by the assemblers and	t of Microchip he chemical s est report at ing slip on the 's semicondu orated cannot raw material d raw material	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers.		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	
Total 100.00	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified the memical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 VO (vul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shertain "reels" may be made from PVC plastic. In the protective "tubes in the protective the information original packing materials is true and correct to the completeness and accuracy of data in this form because in information is often protected from disclosure at mation is provided only as estimates of the average of the trace levels of dopants, metals, and non-metal matchip Technology Incorporated does not provide any unties provided by Microchip Technology Incorporated	d via internal design controls, s chemical substance is NOT an indocument, there is no credible into yegulatory scheme world-wid flammability standard for plasticals/plastics/ ipped are made from polyvinyl of the plastics on in this form concerning subsett has been compiled based of trade secrets and some inform eligible these parts and the aveterials contained within silicon warranty, express or implied, we did and its subsidiaries are contained warranty, express or implied, we did and its subsidiaries are contained warranty.	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devices and the semiconductor devices. Intentional ingredient in the semiconductor devices. Intentional ingredient in the semiconductor devices. Intentional ingredient the unavoidable impurity of dec. Intentional ingredient the unavoidable impurity of dec. Intentional ingredient in the ingredient in the semiconductor of the semiconductor of the semiconductor in the semiconductor of the semiconductor in the semiconductor of the semicon	e and, to the best oncentration of the ses to obtain a to to hold the pack ogy Incorporated inchnology Incorporated by it assemblers and is components. To claration. The ex	e of Microchip the chemical s est report at ing slip on the 's semicondu orated cannot raw material d raw material these estimate	Technology ubstance, if e outer box etor devices guarantee suppliers. suppliers. es do not d product		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 95.73	
	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified nemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ring compounds used by Microchip meet the UL94 V0 (vII.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is shertain "reels" may be made from PVC plastic. The provided protected believes the information of the protective in the form becaution of the provided only as estimates of the average value from the provided by Microchip Technology Incorporated does not provide any nties provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorporated does not provide any nties provided by Microchip Technology Incorporated chip's quotations, sales order acknowledgement, and chip disclaims any duty to notify users of updates o wise, suffered by users or third parties as a result of wise.	d via internal design controls, s chemical substance is NOT an indocument, there is no credible into year and the action of the cals/plastics/ ipped are made from polyvinyl of the control of the control of the cals/plastics/ ipped are made from polyvinyl of the control of the control of the control of the control of the cals/plastics/ ipped are made from polyvinyl of the control of the cals of the control of	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devices to believe that the unavoidable impurity of dec. It is a constant of the semiconductor devices. It is a constant of the semiconductor devices are set set of the semiconductor devices. It is a constant of the semiconductor devices (silicon IC) in the finished parts. It is the semiconductor devices (silicon IC) in the finished parts. It is the semiconductor devices (silicon IC) in the semiconductor devices	e and, to the best oncentration of the sest to obtain a test to hold the pack oncentration of the sest of the sest of sale. These es, direct or indirect oncentration.	e of Microchip the chemical s est report at ing slip on the 's semicondu orated cannot raw material d raw material 'hese estimate clusive, limite are provided i	Technology ubstance, if e outer box ector devices guarantee suppliers. I suppliers es do not ed product in ential or		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 95.73	

OT 06 SOT-23 7:15 PM : 8/8/2012

AICROCHIP	MD 00	007.00		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: MB 03 (Lead)									e3
Paris Outrasses	0.40 No	"Contained In" Sub-Component	% Total Weight			28.26	(mg) Total	Mold Compound	% ot Total Weight	t 54.56
Basic Substance	CAS Number		,	mg/part	ppm		0.77		05.00	-1
Silica, vitreous	60676-86-0	Mold Compound	46.376	24.023	463,760		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731 0.692	33,418		Phenolic Resin	Trade Secret 29690-82-2	6.13 2.45	4
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.337		13,367		Epoxy, Cresol Novolac			4
Carbon Black	1333-86-4	Mold Compound	0.164	0.085	1,637		Carbon Black	1333-86-4	0.30	_
Copper	7440-50-8	Lead Frame	42.275	21.899	422,753			Total	100.00	
Iron	7439-89-6	Lead Frame	1.040	0.539	10,399	22.92	(mg) Total	Lead Frame	% of Total Weight	t 44.25
Silver	7440-22-4	Lead Frame	0.843	0.437	8,430		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.055	0.029	553		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.037	0.019	365		Silver	7440-22-4	1.91	
Metal oxide	Trade Secret	Die Attach	0.102	0.053	1,023		Zinc	7440-66-6	0.13	
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1.023		Phosphorous	7723-14-0	0.08	
Glycol ethers	Trade Secret	Die Attach	0.078	0.040	775			Total	100.00	<u>-U</u>)
Curing / Hardener	Trade Secret	Die Attach	0.028	0.014	279	0.16	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	0.410	0.212	4,100	0.10	Metal oxide	Trade Secret		1 0.51
							Epoxy resins		33	4
Gold	7440-57-5	Wire Bond	0.350	0.181	3,500			Trade Secret	33	_
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.120	0.062	1,200		Glycol ethers	Trade Secret	25	
		TOTALS:	100.000	51.800	1,000,000		Curing / Hardener	Trade Secret	9	<u>J</u>
	0.0518	g Total Mass						Total	100.00)
, , , , ,	internal design cont	rols, supplier declarations, and /or analytical test data.	(None Neces	Directive) and	d With EU	0.21	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	t 0.41
ollance with the above EU Directives has been verified via i emical substance is absent from the list above, the chemi nology Incorporated's knowledge and belief as of the date	ical substance is NC of this document, th	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	ıip	0.21	,			
liance with the above EU Directives has been verified via i emical substance is absent from the list above, the chemi ology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flamr	ical substance is NC of this document, th tory concern for any	OT an intentional ingredient in the semiconductor device nere is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b	est of Microch	ip the	0.21	,	7440-21-3	100	
liance with the above EU Directives has been verified via i emical substance is absent from the list above, the chemi ology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flamr ul.com/global/eng/pages/offerings/industries/chemicals/p rotective "tubes" in which the specific product is shipped	ical substance is NC of this document, the tory concern for any mability standard for plastics/	or an intentional ingredient in the semiconductor device the semiconductor of	e and, to the b le impurity con	est of Microch ncentration of a test report a	ip the		Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified via in the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulang compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped nd certain "reels" may be made from PVC plastic. Chip Technology Incorporated believes the information in es in their original packing materials is true and correct to intee the completeness and accuracy of data in this form brial suppliers. Information is often protected from laterial suppliers. Information is provided only as estimate.	ical substance is NC of this document, the tory concern for any mability standard for elastics/ are made from poly this form concerning the best of its know ecause it has been disclosure as trade es of the average we	or an intentional ingredient in the semiconductor device the is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databativinyl chloride (PVC) plastic. "Window envelopes" used any substances restricted by RoHS in Microchip Technolyledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been provight of these parts and the average weight of anticipate	e and, to the b le impurity con uses to obtain : I to hold the pa ogy Incorpora ochip Technol ety Data Sheet vided by subco d significant to	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpors s provided by ontract assem oxic metals cc	t t the outer ductor ited cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	t 0.35
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via interminent of the minimum of the complete	ical substance is NC of this document, the tory concern for any mability standard for elastics/ are made from poly this form concerning the best of its know ecause it has been disclosure as trade es of the average we and non-metal mate unty, express or imp ated and its subsidi	or an intentional ingredient in the semiconductor device the reis no credible reason to believe that the unavoidable regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databativity of control of the reison of the databativity of control of the reison of the databativity of control of the reison of the data listed in this form. Microchip of the databativity of the data listed in this form. Microchipled based on the ranges provided in Material Safe is secrets and some information may not have been provided to these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this de	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorpora ochip Technol ety Data Sheet- vided by subcd d significant to e finished parts claration. The	est of Microch neentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos.	t the outer ductor raw blers and omponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	t 0.35
pliance with the above EU Directives has been verified via in the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regular or compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The protective the information in the information in the information in the protection of the protection in the provided place in this form be also suppliers. Information is often protected from laterial suppliers. Information is provided only as estimate estimates do not include trace levels of dopants, metals, this Technology Incorporated does not provide any warract warranties provided by Microchip Technology Incorporated towarranties provided by	ical substance is NC of this document, the tory concern for any mability standard for lastics/ are made from poly this form concerning the best of its know occause it has been disclosure as trade as of the average we and non-metal mat anty, express or imp ated and its subsidi trocices. ages to Material Con sers' reliance on the	DT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidably regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativity of control of the property of t	e and, to the b le impurity con uses to obtain a l to hold the pa ogy Incorpora ochip Technol ety Data Sheet- vided by subct de significant conditions of s es, direct or in	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim iale. These ard	the outer ductor sted cannot raw blers and omponents. ited e provided	0.18	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 100.00 % of Total Weight 100 100.00	t 0.35
liance with the above EU Directives has been verified via i emical substance is absent from the list above, the chemiology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. This Technology Incorporated believes the information in its in their original packing materials is true and correct to thee the completeness and accuracy of data in this form be all suppliers. Supplier information is often protected from aterial suppliers. Information is provided only as estimate estimates do not include trace levels of dopants, metals, whip Technology Incorporated does not provide any warra cit warranties provided by Microchip Technology Incorporated for acknowledgement, and it with the complete of the use of the use so the provider of the use the conditions and substitutions, sales order acknowledgement, and it with disclaims any duty to notify users of updates or changles, suffered by users or third parties as a result of the users.	ical substance is NC of this document, the tory concern for any mability standard for lastics/ are made from poly this form concerning the best of its know occause it has been disclosure as trade as of the average we and non-metal mat anty, express or imp ated and its subsidi trocices. ages to Material Con sers' reliance on the	DT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidably regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativity of control of the property of t	e and, to the b le impurity con uses to obtain a l to hold the pa ogy Incorpora ochip Technol ety Data Sheet- vided by subct de significant conditions of s es, direct or in	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim iale. These ard	the outer ductor sted cannot raw blers and omponents. ited e provided	0.18	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	t 0.35

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Semiconductor Device Typ	o: PC 04 (100)	SOT-143 (77(AP)		nation Base A	. ,			ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e. NC 04 (Lead)	"Contained In"	% Total					I		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5.69	(mg) Total	Mold Compound	% ot Total Weight	62.57
Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531,845		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15,330		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1,877		Carbon Black	1333-86-4	0.30	
Iron	7439-89-6	Lead Frame	14.095	1.283	140,947			Total	100.00	
Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712	2.40	(mg) Total	Lead Frame	% of Total Weight	26.36
Silver	7440-22-4	Lead Frame	0.502	0.046	5,022		Iron	7439-89-6	53.47	
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2,636		Nickel	7440-02-0	42.00	
Manganese	7439-96-5	Lead Frame	0.211	0.019	2,109		Silver	7440-22-4	1.91	
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1,318		Cobalt	7440-48-4	1.00	
Silicon	7440-21-3	Lead Frame	0.079	0.007	791		Manganese	7439-96-5	0.80	
Phosphorous	7723-14-0	Lead Frame	0.007	0.001	66		Zinc (Metal)	7440-66-6	0.50	
Silver (Ag)	7440-22-4	Die Attach	0.259	0.024	2,591		Silicon	7440-21-3	0.30	
Proprietary Resin	Trade Secret	Die Attach	0.061	0.006	611		Phosphorous	7723-14-0	0.03	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.010	0.001	99			Total	100.00	4
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42,900	0.03	(mg) Total	Die Attach	% of Total Weight	0.33
Gold	7440-57-5	Wire Bond	0.110	0.010	1.100		Silver (Aa)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6,340	0.577	63,400		Proprietary Resin	Trade Secret	19	
•••		TOTALS:	100.000	9.100	1,000,000	Proprietan	Curing agent & Hardener	Trade Secret	3	
	0 0091	a Total Mass								<i>-</i>
		g Total Mass	(D. 110 D.)	D: .: \				Total	100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	I with EU	0.39	Total (mg)	Chip (Die)	% of Total Weight	4.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	: Directive) and	l with EU	0.39	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.29
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via interest in the list above, the chemical substance is absent from the list above, the chemical substance is knowledge and belief as of the date ical substance, if any, is not below the threshold of regular	ply with EU Directive nternal design confical substance is NO of this document, the tory concern for an	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b	est of Microch	ip the	0.39	, ,,	Chip (Die)	% of Total Weight	4.29
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via intermined in the list above, the chemical substance is absent from the list above, the chemical substance is an absent from the list above, the chemical substance, if any, is not below the threshold of regulaing compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/p	ply with EU Directive internal design confical substance is No of this document, the tory concern for an inability standard for lastics/	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa	e and, to the b le impurity cou	est of Microch ncentration of a test report a	ip the	0.39	, ,,	Chip (Die) 7440-21-3	% of Total Weight	4.29 0.11
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the cheminology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flaming://ul.com/global/eng/pages/offerings/industries/chemicals/pprotective "tubes" in which the specific product is shipped	ply with EU Directive internal design confical substance is No of this document, the tory concern for an inability standard for lastics/	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa	e and, to the b le impurity cou	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the chem hology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamm: //ul.com/global/eng/pages/offerings/industries/chemicals/pprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. In ochip Technology Incorporated believes the information in inces in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form the certain suppliers. Supplier information is often protected from material suppliers. Supplier information is provided only as estimate.	nternal design control of this document, the tory concern for an ability standard folastics/ are made from polythis form concerning the best of its knowecause it has been disclosure as trade, so of the average we	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used the gradient of the wide and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe escerets and some information may not have been proveleight of these parts and the average weight of anticipate	e and, to the b le impurity col ses to obtain a to hold the pa ogy Incorpora ochip Technol ty Data Sheets rided by subco d significant te	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	ip the the outer ductor ted cannot raw olers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
s semiconductor device and its homogenous materials comective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chemichnology incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regular diing compounds used by Microchip meet the UL94 V0 flammot/lul.com/global/eng/pages/offerings/industries/chemicals/page protective "tubes" in which the specific product is shipped at and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in rices in their original packing materials is true and correct to transtee the completeness and accuracy of data in this form be terral suppliers. Supplier information is often protected from material suppliers. Supplier information is provided only as estimate the completeness and accuracy of data in this form the material suppliers. Supplier information is provided only as estimate on the protected from the protected fro	nternal design control of this document, the document, the document, the document of the document, the document of the document, the document of the document, the document of	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device, there is no credible reason to believe that the unavoidable y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used the substances restricted by RoHS in Microchip Technologies and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe is escrets and some information may not have been provided these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the belied, with respect to the information provided in this deviced.	e and, to the be impurity consess to obtain a to hold the part ochip Technol by Data Sheet ided by subcd significant to finished parts claration. The	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co. s.	ip the the outer ductor ted cannot raw olers and mponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
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tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via intermical substance is absent from the list above, the chem hology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regulaing compounds used by Microchip meet the UL94 V0 flamr (vul.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. This Technology Incorporated believes the information in es in their original packing materials is true and correct to intee the completeness and accuracy of data in this form the iral suppliers. Supplier information is often protected from naterial suppliers. Provided only as estimate estimates do not include trace levels of dopants, metals, chip Technology Incorporated does not provide any warractic warranties provided by Microchip Technology Incorporated to the completenes and the completenes and the completenes of the completenes and accuracy of the protected from the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and accuracy of data in this form the completeness and the complet	ply with EU Directive the content of	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device, there is no credible reason to believe that the unavoidable y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databate yvinyl chloride (PVC) plastic. "Window envelopes" used the semiconductor of the date listed in this form. Microcompiled based on the ranges provided in Material Safe is secrets and some information may not have been provight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the collied, with respect to the information provided in this deciaries are contained in Microchip's standard terms and other the Declarations and shall not be liable for any damage effects.	e and, to the ble impurity colors to hold the party of the hold the party data Sheets ided by subcod dignificant to finished party claration. The conditions of sets, direct or in-	est of Microch ncentration of a test report at acking slip on ted's semicon oogy Incorpora s provided by ontract assem ontract assem ontract assem s.exclusive, lim sale. These are	ip the the outer ductor ted cannot raw olers and mponents. ited provided uential or	0.01	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.11

RC 4 SOT-143 7:15 PM : 8/8/2012

ICROCHIP Semiconductor Device Typ	e: DB 03 (Lead) SC	DT-223 (F6)		nation Base A pper Alloy (C	•			nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total					I		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	56.72	(mg) Total	Mold Compound	% ot Total Weight	49.02
Silica, vitreous	60676-86-0	Mold Compound	41.667	48.209	416,670		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.201	1.390	12,010		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1,471		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.941	51.997	449,408			Total	100.00	
Iron	7439-89-6	Lead Frame	1.105	1.279	11,054	54.43	(mg) Total	Lead Frame	% of Total Weight	47.04
Silver	7440-22-4	Lead Frame	0.896	1.037	8,961		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.059	0.068	588		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.039	0.045	388		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.502	0.581	5,024		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.118	0.137	1,184		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800	0.74	(mg) Total	Die Attach	% of Total Weight	0.64
Gold	7440-57-5	Wire Bond	0.150	0.174	1,500		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 P	lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	1.816	15,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	115.700	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
								Total	100.00	
miconductor device and its homogenous materials com		Total Mass	(PoUS Posset	Directive) an	d with EII			Total	100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU		•		1.83	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight	1.58
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via lemical substance is absent from the list above, the chemology Incorporated's knowledge and belief as of the date	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor devic e is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	iip	1.83		Chip (Die) 7440-21-3	% of Total Weight	1.58
semiconductor device and its homogenous materials com- ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via semical substance is absent from the list above, the chem- nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flamm (ul.com/global/eng/pages/offerings/industries/chemicals/p	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther tory concern for any r mability standard for p	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor devic e is no credible reason to believe that the unavoidab egulatory scheme world-wide.	e and, to the be	est of Microch	ip the	0.17		Chip (Die) 7440-21-3	% of Total Weight	1.58 0.15
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Illiance with the above EU Directives has been verified via the semical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulance compounds used by Microchip meet the UL94 V0 flaming	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther tory concern for any re mability standard for p lastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. lastics. You can access the UL iQTM family of databa	e and, to the belle impurity cor	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Illiance with the above EU Directives has been verified via the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther tory concern for any r mability standard for p lastics/ are made from polyvi this form concerning the best of its knowle because it has been co disclosure as trade s es of the average weig es	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. Iastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safecrets and some information may not have been prown to of these parts and the average weight of anticipate	e and, to the bile impurity cor ases to obtain a i to hold the pa logy Incorporat ochip Technolety Data Sheets vided by subco d significant to	est of Microch neentration of a test report a cking slip on ed's semicor ogy Incorpora provided by outract assem oxic metals cc	the the outer ductor ted cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
cive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Islance with the above EU Directives has been verified via a semical substance is absent from the list above, the cheme to longy Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flammer (ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. The protective "tubes in the provided believes the information in sex in their original packing materials is true and correct to the the completeness and accuracy of data in this form the sial suppliers. Supplier information is often protected from laterial suppliers. Information is provided only as estimate estimates do not include trace levels of dopants, metals, chip Technology Incorporated does not provide any warract to transport of the provide and the provided by Microchip Technology Incorporated to the provided and the provided by Microchip Technology Incorporated to the provided and the provided by Microchip Technology Incorporated to the provided by Microchip	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther tory concern for any r mability standard for p lastics/ are made from polyvi this form concerning the best of its knowle recause it has been co disclosure as trade si es of the average weig and non-metal materi anty, express or implie ated and its subsidiar nvoices.	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. Ilastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safected and some information may not have been protest these parts and the average weight of anticiprote als contained within silicon devices (silicon IC) in the difference of the information provided in this delease are contained in Microchip's standard terms and delease are contained in Microchip's standard terms and the supplementation of the same contained in Microchip's standard terms and the supplementation in the supplementation of the same contained in Microchip's standard terms and the supplementation in the supplementation is supplementation.	e and, to the bile impurity cor ases to obtain a it to hold the pa logy incorporat ochip Technol by Data Sheets vided by subcod d significant to e finished parts eclaration. The conditions of s	est of Microcl icentration of a test report a cking slip on ed's semicor ogy Incorpora is provided by intract assem poxic metals con- icentract assem contract assem contract assem in a contract assem contract as contract assem contract assem cont	t the outer ductor raw blers and mponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
cive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Islance with the above EU Directives has been verified via lemical substance is absent from the list above, the chem tology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flammer. Incom/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Inchip Technology Incorporated believes the information in the incompleteness and accuracy of data in this form is in their original packing materials is true and correct to nate the completeness and accuracy of data in this form it is usuppliers. Supplier information is often protected from a testimates do not include trace levels of dopants, metals, echip Technology Incorporated does not provide any warract to warranties provided by Microchip Technology Incorporated to warranties provided by Microchip	ply with EU Directive 2 internal design contro ical substance is NOT of this document, ther tory concern for any r mability standard for p lastics/ are made from polyvi this form concerning the best of its knowle because it has been co disclosure as trade s so of the average weig and non-metal materi anty, express or implie ated and its subsidiar ivoices. types to Material Conter sers' reliance on the ir	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. lastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micropried based on the ranges provided in Material Safecrets and some information may not have been proint of these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this deles are contained in Microchip's standard terms and in the Declarations and shall not be liable for any damagent.	ee and, to the bile impurity cor asses to obtain a it to hold the pa logy Incorporat ochip Technol, ety Data Sheets vided by subcord significant to ef inished parts oclaration. The conditions of s es, direct or inc	est of Microch neentration of a test report a cking slip on ed's semicor ogy Incorpor; s provided by intract assem oxic metals co. exclusive, lim ale. These are	t the outer ductor ited cannot raw blers and imponents. ited	0.17	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.15

DB 3 SOT-23 7:15 PM : 8/8/2012

AICROCHIP				nation Base A				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e: DC 05 (Lead) SC	OT-223 (N7)								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.71	(mg) Total	Mold Compound	% ot Total Weight	52.77
Silica, vitreous	60676-86-0	Mold Compound	44.855	7,401	448,545		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.293	0.213	12,929		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.158	0.026	1,583		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.148	5.799	351,482			Total	100.00	•
Iron	7439-89-6	Lead Frame	0.865	0.143	8,646	6.07	(mg) Total	Lead Frame	% of Total Weight	36.79
Silver	7440-22-4	Lead Frame	0.701	0.116	7.008	0.0.	Copper	7440-50-8	95.54	1 30
Zinc	7440-66-6	Lead Frame	0.046	0.008	460		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.030	0.005	304		Silver	7440-22-4	1.91	
Silver (Aq)	7440-22-4	Die Attach	0.667	0.110	6,673		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.157	0.026	1.573		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.026	0.004	255		Thospholous	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	1.030	0.170	10,300	0.14	(mg) Total	Die Attach	% of Total Weight	0.85
	7440-57-5	Wire Bond	0.550	0.170	5.500	0.14				0.85
Gold					80,100		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	8.010 100.000	1.322 16.500	1.000.000	D	Proprietary Resin Curing agent & Hardener	Trade Secret Trade Secret	19 3	
			100.000	16.500	1,000,000	Proprietar	y Curing agent & Hardener		-	
	0.0165 g Tot	tal Mass						Total	100.00	
semiconductor device and its homogenous materials as-	mbr with Ell Directive 2002									
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	pry with EO Directive 2002	95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.17	Total (mg)	Chip (Die)	% of Total Weight	1.03
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Appliance with the above EU Directives has been verified via	internal design controls, s	upplier declarations, and /or analytical test data.		·		0.17	Total (mg) Doped Silicon	7440-21-3	100	1.03
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide.	e and, to the be	est of Microch	iip the		Doped Silicon	7440-21-3 Total	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem anology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flam if all com/global/eng/pages/offerings/industries/chemicals/g	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul nability standard for plasti lastics/	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. CS. You can access the UL iQTM family of database.	e and, to the bee impurity cor	est of Microch ncentration of a test report a	nip the	0.17	, ,,	7440-21-3	100	0.55
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flam.	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul nability standard for plasti lastics/	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. CS. You can access the UL iQTM family of database.	e and, to the bee impurity cor	est of Microch ncentration of a test report a	nip the		Doped Silicon	7440-21-3 Total	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flam: "//ul.com/global/eng/pages/offerings/industries/chemicals/fuprotective "tubes" in which the specific product is shipped	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul mability standard for plasti lastics/ are made from polyvinyl of this form concerning substantials the the best of its knowledge because it has been compil disclosure as trade secret es of the average weight of	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe stand some information may not have been prov these parts and the average weight of anticipater	e and, to the bee impurity corses to obtain a to hold the part of	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	t t the outer ductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flame://ul.com/global/eng/pages/offerings/industries/chemicals/ipprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form lerial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimat	internal design controls, sical substance is NOT an in of this document, there is tory concern for any regul mability standard for plasticatics/ are made from polyvinyl of this form concerning substances it has been compiled disclosure as trade secretes of the average weight of and non-metal materials of unity, express or implied, wated and its subsidiaries as	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe test and some information may not have been prov these parts and the average weight of anticipated contained within silicon devices (silicon IC) in the lith respect to the information provided in this decition.	e and, to the be impurity consess to obtain a to hold the part oblight of the part of the	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co.	t the outer ductor raw blers and omponents.		Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flamiciful.com/global/eng/pages/offerings/industries/chemicals/ipprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to cantee the completeness and accuracy of data in this form larial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimates estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul mability standard for plasti- lastics/ are made from polyvinyl of this form concerning sub- title best of its knowledge because it has been completed in disclosure as trade secre- es of the average weight of and non-metal materials of anty, express or implied, we ated and its subsidiaries a voices.	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe ss and some information may not have been prov these parts and the average weight of anticipater contained within silicon devices (silicon IC) in the lith respect to the information provided in this dec re contained in Microchip's standard terms and ce	e and, to the bee impurity corses to obtain a to hold the parts of the	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos. exclusive, lim sale. These are	t the outer ductor ated cannot raw blers and exponents.	0.09	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.55
pliance with the above EU Directives has been verified via themical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flam //ul.com/global/eng/pages/offerings/industries/chemicals/sprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to antee the completeness and accuracy of data in this form learlal suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated control in the completeness and accuracy of the protected from the completeness and accuracy of data in this form learning the provided only as estimated as estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide any warratuct warranties provided by Microchip Technology Incorporated does not provide	internal design controls, si ical substance is NOT an in of this document, there is tory concern for any regul mability standard for plasti- lastics/ are made from polyvinyl of this form concerning sub- title best of its knowledge because it has been completed in disclosure as trade secre- es of the average weight of and non-metal materials of anty, express or implied, we ated and its subsidiaries a voices.	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe ss and some information may not have been prov these parts and the average weight of anticipater contained within silicon devices (silicon IC) in the lith respect to the information provided in this dec re contained in Microchip's standard terms and ce	e and, to the bee impurity corses to obtain a to hold the parts of the	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos. exclusive, lim sale. These are	t the outer ductor ated cannot raw blers and exponents.	0.09	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.55

DC 5 SOT-223 7:15 PM : 8/8/2012

ROCHIP				nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: OS 05 (Lead) TS0	OT (L9)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.99	(mg) Total	Mold Compound	% ot Total Weight	62.42
Silica, vitreous	60676-86-0	Mold Compound	53.057	6.791	530.570		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.529	0.196	15,293		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.187	0.024	1,873		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.585	3.275	255,849			Total	100.00	
Iron	7439-89-6	Lead Frame	0.629	0.081	6,293	3.43	(mg) Total	Lead Frame	% of Total Weight	26.78
Silver	7440-22-4	Lead Frame	0.510	0.065	5,102		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.004	335		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.003	221		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.531	0.196	15,308		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.361	0.046	3,608		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.059	0.007	585			Total	100.00	
Silicon	7440-21-3	Chip (Die)	5.340	0.684	53,400	0.25	(mg) Total	Die Attach	% of Total Weight	1.95
Gold	7440-57-5	Wire Bond	0.400	0.051	4,000		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating (on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.110	0.398	31,100		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	12.800	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret Total	3 100.00	
miconductor device and its homogenous materials con e 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.68	Total (mg)	Chip (Die)	% of Total Weight	5.34
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir	95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data.	e and, to the b	est of Microch	ıip	0.68	Total (mg) Doped Silicon		% of Total Weight 100 100.00	5.34
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir of this document, there is tory concern for any regula mability standard for plasti-	195/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide.	e and, to the b le impurity co	est of Microch	iip the	0.68		Chip (Die) 7440-21-3	100	5.34
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem logy Incorporated's knowledge and belief as of the date al substance, if any, is not below the threshold of regula g compounds used by Microchip meet the UL94 V0 flam	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir of this document, there is tory concern for any regula mability standard for plasti- lastics/	195/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Cs. You can access the UL iQTM family of databa	e and, to the b le impurity con ases to obtain a	est of Microch ncentration of a test report a	iip the		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100 100.00 100.00 % of Total Weight	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem logy Incorporated's knowledge and belief as of the date al substance, if any, is not below the threshold of regule g compounds used by Microchip meet the UL94 V0 flam L.com/global/eng/pages/offerings/industries/chemicals/ itective "tubes" in which the specific product is shipped it certain "reels" may be made from PVC plastic. In Technology Incorporated believes the information in in their original packing materials is true and correct to eet the completeness and accuracy of data in this form I suppliers. Supplier information is often protected fron terial suppliers. Information is provided only as estimates isstimates do not include trace levels of dopants, metals	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir of this document, there is story concern for any regular mability standard for plastical lastics/ are made from polyvinyl control of this form concerning substance is the best of its knowledge because it has been compiled disclosure as trade secret and non-metal materials controls.	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device or credible reason to believe that the unavoidable atory scheme world-wide. In the company of the	e and, to the belle impurity consists to obtain a logy Incorporation ochip Technol ety Data Sheets wided by subcoded significant to a finished parts	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co	t the outer ductor raw blers and imponents.		Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem logy Incorporated's knowledge and belief as of the date al substance, if any, is not below the threshold of regula grompounds used by Microchip meet the UL94 V0 flam Loom/global/eng/pages/offerings/industries/chemicals/pages/offerings/industries/chemi	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir of this document, there is tory concern for any regular mability standard for plastical stics/ are made from polyvinyl control of this form concerning substance is the best of its knowledge expenses of the average weight of and non-metal materials control of the co	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. In the intentional ingredient in the semiconductor device that the unavoidable atory scheme world-wide. In the intentional intention in the unavoidable atory scheme world-wide. In the intentional inte	se and, to the belle impurity consistent of the latest to obtain a long incorporation of the latest	est of Microch neentration of a test report a necking slip on ted's semicon ogy Incorpors s provided by ontract assem oxic metals co s. exclusive, lim sale. These and	t the outer ductor sted cannot raw blers and imponents.		Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 100.00 % of Total Weight	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via mical substance is absent from the list above, the chem logy Incorporated's knowledge and belief as of the date al substance, if any, is not below the threshold of reguling compounds used by Microchip meet the UL94 V0 flam L.com/global/eng/pages/offerings/industries/chemicals/intective "tubes" in which the specific product is shipped to certain "reels" may be made from PVC plastic. In Technology Incorporated believes the information in in their original packing materials is true and correct the ethe completeness and accuracy of data in this form I suppliers. Supplier information is often protected fronterial suppliers. Information is provided only as estimates do not include trace levels of dopants, metals in Technology Incorporated does not provide any warn to warranties provided by Microchip Technology Incorporated in the process of updates or chaits of the discount of the provide and the trace is provided by Microchip Technology Incorporated does not provide any warn to warranties provided by Microchip Technology Incorporated does not provide any warn to warranties provided by Microchip Technology Incorporated does not provide any warn to warranties provided by Microchip Technology Incorporated does not provide any warn to warranties provided by Microchip Technology Incorporated does not provide any warn to warnanties provided by Microchip Technology Incorporated does not provide any warn to warnanties provided by Microchip Technology Incorporated does not provide any warn to warnanties provided by Microchip Technology Incorporated does not provided by Microchip Technology I	ply with EU Directive 2002/ internal design controls, so ical substance is NOT an ir of this document, there is tory concern for any regular mability standard for plastical stics/ are made from polyvinyl control of this form concerning substance is the best of its knowledge expenses of the average weight of and non-metal materials control of the co	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. In the intentional ingredient in the semiconductor device that the unavoidable atory scheme world-wide. In the intentional intention in the unavoidable atory scheme world-wide. In the intentional inte	se and, to the belle impurity consistent of the latest to obtain a long incorporation of the latest	est of Microch neentration of a test report a necking slip on ted's semicon ogy Incorpors s provided by ontract assem oxic metals co s. exclusive, lim sale. These and	t the outer ductor sted cannot raw blers and imponents.	0.05	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.4

OS 5 TSOT 7:16 PM: 8/8/2012

ICROCHIP Semiconductor Device Typ	e: LB 03 (Lead) S	C-70 (B2 / BJ)		nation Base A	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
·		"Contained In"	% Total			4.39	(mg) Total	Mold Compound	%ot Total Weight	37.38
Basic Substance Silica, vitreous	60676-86-0	Sub-Component Mold Compound	Weight 67.830	mg/part 3.731	ppm		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	678,300 48,878	ł	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878	ł	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.108	19,551	i	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.221	0.562	102,209	1		Total	100.00	
Iron	1309-37-1	Lead Frame	0.247	0.014	2,468	0.58	(mg) Total	Lead Frame	% of Total Weight	5.68
Zinc	7440-66-6	Lead Frame	0.013	0.001	131		Copper	7440-50-8	97.34	
Phosphate	7723-14-0	Lead Frame	0.009	0.000	87	1	Iron	1309-37-1	2.35	
Silver	7440-22-4	Lead Frame	0.008	0.000	84		Zinc	7440-66-6	0.13	
Chromium	7440-47-3	Lead Frame	0.001	0.000	11	l	Phosphate	7723-14-0	0.08	
Lead	7439-92-1	Lead Frame	0.001	0.000	11	l	Silver	7440-22-4	0.08	
Cadmium	7440-43-9	Lead Frame	0.000	0.000	1	ı	Chromium	7440-47-3	0.01	
Silver (Ag)	7440-22-4	Die Attach	0.589	0.032	5,888	l	Lead	7439-92-1	0.01	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.008	1,388		Cadmium	7440-43-9	0.00	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.001	225			Total		
Silicon	7440-21-3	Chip (Die)	7.500	0.413	75,000	0.04	(mg) Total	Die Attach	% of Total Weight	0.51
Gold	7440-57-5	Wire Bond	0.200	0.011	2,000		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 P	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.069	12,500		Proprietary Resin	Trade Secret	19 3	
		TOTALS:	100.000	5.500	1,000,000	Proprietary	Curing agent & Hardener		Ů	
		Total Mass						Total	100.00	
semiconductor device and its homogenous materials comp	ly with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (ROHS Recast	Directive) and	with EU					
tive 2002/53/EC (End-of-Life Venicles (ELV) Directive).						0.41	Total (mg)	Chip (Die)	% of Total Weight	0.51
, , , ,	ternal design controls	, supplier declarations, and /or analytical test data.				0.41	Total (mg) Doped Silicon	7440-21-3	100	0.51
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o tance, if any, is not below the threshold of regulatory conce	al substance is NOT a f this document, there	n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable			p	0.41			<u> </u>	0.51
pliance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o ance, if any, is not below the threshold of regulatory concein ng compounds used by Microchip meet the UL94 V0 flamm	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.	impurity con	centration of t	p	0.01		7440-21-3	100	0.51
pliance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemical substance is absent from the list above, the chemicalogy Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/playorotective "tubes" in which the specific product is shipped a	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. stics. You can access the UL iQTM family of databas	e impurity con	centration of t	p he chemical	0.01	Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. stics. You can access the UL iQTM family of databas	e impurity con	centration of t	p he chemical	0.01	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o tance, if any, is not below the threshold of regulatory conceing compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/ are made from polyvin this form concerning s the best of its knowled cause it has been com e as trade secrets and ge weight of these par	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. Instics. You can access the UL iQTM family of databas yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microchiplied based on the ranges provided in Material Safets some information may not have been provided by sits and the average weight of anticipated significant to	es to obtain a o hold the pace gy Incorporate chip Technolo y Data Sheets ubcontract ass exic metals co	test report at king slip on the d's semicond gy Incorporat provided by resemblers and	p he chemical he outer box luctor ed cannot aw material raw material	0.01	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date o tance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pla/protective "tubes" in which the specific product is shipped a tertain "reels" may be made from PVC plastic. The protective incorporated believes the information in the interioriginal packing materials is true and correct to the tantee the completeness and accuracy of data in this form beliers. Supplier information is often protected from disclosur liers. Information is provided only as estimates of the averaliers. Information is provided only as estimates of the averaliers.	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/ are made from polyvin his form concerning s the best of its knowled acause it has been con a strade secrets and ge weight of these par n-metal materials cont ty, express or implied ts subsidiaries are coi	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. Instics. You can access the UL iQTM family of database of the control of t	es to obtain a o hold the pace gy Incorporate chip Technolo y Data Sheets ubcontract ass oxic metals co d parts.	test report at the contraction of the contraction o	p he chemical he outer box luctor ed cannot aw material raw material rese	0.01	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
liance with the above EU Directives has been verified via in emical substance is absent from the list above, the chemic ology Incorporated's knowledge and belief as of the date o ince, if any, is not below the threshold of regulatory concerns of compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/platotective "tubes" in which the specific product is shipped a retain "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information in the interioriginal packing materials is true and correct to the the completeness and accuracy of data in this form be ers. Supplier information is often protected from disclosurers. Information is provided only as estimates of the averates do not include trace levels of dopants, metals, and nor thip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and iship's quotations, sales order acknowledgement, and involutions, sales order acknowledgement, and involutions, suffered by users or third parties as a result of the use the provided by users or third parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties as a result of the user and the parties are parties and the part	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/ are made from polyvin his form concerning s the best of its knowled iscause it has been con re as trade secrets and ge weight of these par n-metal materials cont hity, express or implied its subsidiaries are con ces. ges to Material Content ers' reliance on the inf-	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. Instics. You can access the UL iQTM family of database of the control of t	es to obtain a o hold the pace gy Incorporate chip Technolo y Data Sheets ubcontract ass oxic metals co d parts. laration. The e of sale. Thes s, direct or ind	test report at test report at testing slip on the dissemicond gy Incorporate provided by resemblers and imponents. The exclusive, limit e are provided irect, consequirect, consequirect,	p he chemical he outer box luctor ed cannot aw material raw material ese ted product i in	0.01	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	3
contained with the above EU Directives has been verified via in the microstation of the date of the da	al substance is NOT a f this document, there rn for any regulatory s ability standard for pla astics/ are made from polyvin his form concerning s the best of its knowled iscause it has been con re as trade secrets and ge weight of these par n-metal materials cont hity, express or implied its subsidiaries are con ces. ges to Material Content ers' reliance on the inf-	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide. Instics. You can access the UL iQTM family of database of the control of t	es to obtain a o hold the pace gy Incorporate chip Technolo y Data Sheets ubcontract ass oxic metals co d parts. laration. The e of sale. Thes s, direct or ind	test report at test report at testing slip on the dissemicond gy Incorporate provided by resemblers and imponents. The exclusive, limit e are provided irect, consequirect, consequirect,	p he chemical he outer box luctor ed cannot aw material raw material ese ted product i in	0.01	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	3

LB 3 SC-70 7:16 PM : 8/8/2012

AICROCHIP				nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: LT 05 (Lead) \$	SC-70 (B4/BZ)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	2.59	(mg) Total	Mold Compound	% ot Total Weight	41.18
Silica, vitreous	60676-86-0	Mold Compound	35.003	2.205	350.030		Silica, vitreous	60676-86-0	85.00	Ī
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.009	0.064	10,089		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.124	0.008	1,235		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	6.630	0.418	66,303		Garbori Bidok	Total	100.00	1
Iron	7439-89-6	Lead Frame	0.163	0.010	1.631	0.44	(mg) Total	Lead Frame	% of Total Weight	6.94
Silver	7440-22-4	Lead Frame	0.132	0.010	1,322	0.44	V 27	7440-50-8		6.94
Zinc		Lead Frame	0.132	0.008			Copper	7440-50-8 7439-89-6	95.54	
	7440-66-6				87		Iron		2.35	
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	57		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.793	0.050	7,929		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.187	0.012	1,869		Phosphorous	7723-14-0	0.08	J
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14,100	0.06	(mg) Total	Die Attach	% of Total Weight	1.01
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	48.530	3.057	485,300		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	6.300	1,000,000	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	0.0063	g Total Mass			,,		,	Total	100.00	y
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.09	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	1.41
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via i	internal design contr	rols, supplier declarations, and /or analytical test data.		•		0.09		,		1.41
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the cheminal ology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular	internal design conti ical substance is NO of this document, th atory concern for any	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidabor regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch	ip the	0.09		7440-21-3	100	1.41
ictive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via ichemical substance is absent from the list above, the chemich hoology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flammeding compounds used the UL94 V0 flammeding compounds used the U	internal design contrical substance is NO of this document, the story concern for any mability standard for	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidabor regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch	ip the	0.09		7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemichnology incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flammo://ul.com/global/eng/pages/offerings/industries/chemicals/peprotective "tubes" in which the specific product is shipped	internal design contrical substance is NO of this document, thatory concern for any mability standard for plastics/	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidabor regulatory scheme world-wide. plastics. You can access the UL iQTM family of databa	e and, to the b le impurity con ses to obtain a	est of Microch ncentration of a test report a	ip the		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
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ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemical of chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regula diding compounds used by Microchip meet the UL94 V0 flamm or/ful.com/global/eng/pages/offerings/industries/chemicals/per protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form be terial suppliers. Supplier information is often protected from reaterial suppliers. Supplier information is provided only as estimate	internal design contrical substance is NO of this document, thatory concern for any mability standard for plastics/ I are made from poly this form concerning the best of its known because it has been on disclosure as trade es of the average we and non-metal mate anty, express or implicated and its subsidial.	rols, supplier declarations, and /or analytical test data. It an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol ledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe secrets and some information may not have been progight of these parts and the average weight of anticipate grals contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this de	e and, to the ble impurity consists to obtain a to hold the part of the part o	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpore s provided by nutract assem oxic metals cos.	ip the the outer ductor ted cannot raw belers and imponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.93
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemical necessary of the date including comported's knowledge and belief as of the date including compounds used by Microchip meet the UL94 V0 flammo://ul.com/global/eng/pages/offerings/industries/chemicals/pepprotective "tubes" in which the specific product is shipped at and certain "reels" may be made from PVC plastic. Incoming Technology Incorporated believes the information in incides in their original packing materials is true and correct to irrantee the completeness and accuracy of data in this form be terrial suppliers. Supplier information is often protected from material suppliers. Supplier information is often protected from rematerial suppliers. Supplier information is often protected from the protected from the completeness and accuracy of data in this form be terrial suppliers. Supplier information is often protected from the completeness and accuracy of data in this form be terrial suppliers. Supplier information is often protected from material suppliers. Supplier information is often protected from the protection of the prote	internal design contrical substance is NO of this document, that or concern for any mability standard for plastics/ I are made from poly this form concerning the best of its known occause it has been on disclosure as trade es of the average we and non-metal mate anty, express or implicated and its subsidianvoices. Inges to Material Contribution of the control of	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation of the control of the cont	e and, to the ble impurity consess to obtain a to hold the part ochip Technol by Data Sheets ided by subcod significant to finished parts claration. The conditions of sees, direct or in-	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim aale. These ard	the outer ductor ted cannot raw blers and mponents. ited e provided	0.06	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100	0.93
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemichnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamm by/ul.com/global/eng/pages/offerings/industries/chemicals/peptotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in ices in their original packing materials is true and correct to trantee the completeness and accuracy of data in this form be terial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, metals, rochip Technology Incorporated does not provide any warra duct warranties provided by Microchip Technology Incorpor inforcochip's quotations, sales order acknowledgement, and ir rochip disclaims any duty to notify users of updates or chan erwise, suffered by users or third parties as a result of the users.	internal design contrical substance is NO of this document, that or concern for any mability standard for plastics/ I are made from poly this form concerning the best of its known occause it has been on disclosure as trade es of the average we and non-metal mate anty, express or implicated and its subsidianvoices. Inges to Material Contribution of the control of	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation of the control of the cont	e and, to the ble impurity consess to obtain a to hold the part ochip Technol by Data Sheets ided by subcod significant to finished parts claration. The conditions of sees, direct or in-	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim aale. These ard	ip the the outer ductor ted cannot raw blers and mponents. ited e provided	0.06	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.93

LT 5 SC-70 7:16 PM : 8/8/2012

CROCHIP Semiconductor Device Type	· IT or ITY 05 (lead) SC	.70 NiPd∆u. (sa)		nation Base A	•		•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
		"Contained In" Sub-Component	% Total Weight			3.94	(mg) Total	Mold Compound	%ot Total Weight	-
Basic Substance	CAS Number	•		mg/part	ppm		, 0,	60676-86-0		i
Silica, vitreous Epoxy Resin	60676-86-0 Trade Secret	Mold Compound Mold Compound	53.151 3.830	3.348 0.241	531,505 38.300	-	Silica, vitreous Epoxy Resin	Trade Secret	85.00 6.13	
Phenolic Resin	Trade Secret	Mold Compound	3.830	0.241	38,300	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.532	0.097	15.320	1	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.188	0.012	1.876	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	24.821	1,564	248.212	i		Total	100.00	Ц
Iron	7439-89-6	Lead Frame	0.587	0.037	5,867	1.61	(mg) Total	Lead Frame	% of Total Weight	
Phosphorous	7723-14-0	Lead Frame	0.064	0.004	638	1.01	Copper	7440-50-8	97.30	20.01
Zinc (Metal)	7440-44-0	Lead Frame	0.038	0.002	383	1	Iron	7439-89-6	2.30	
Aluminum oxide	1344-28-1	Die Attach	0.601	0.038	6,012	1	Phosphorous	7723-14-0	0.25	
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.601	0.038	6.012	1	Zinc (Metal)	7440-44-0	0.25	
Epoxy resin	Trade Secret - 10114	Die Attach	0.328	0.038	3,279	1	ZIIIC (IVICIAI)	Total	100.00	Ц
Epoxy resin	Trade Secret - 10114	Die Attach	0.164	0.021	1.640	0.11	(mg) Total	Die Attach	% of Total Weight	
Amine	Trade Secret - 10103	Die Attach	0.066	0.004	656	U.11	Aluminum oxide	1344-28-1	% or Total Weight	1.70
Silicon	7440-21-3	Chip (Die)	7.520	0.474	75,200	Single dama al	col monoethyl ether acetate	112-15-2	34	
Gold	7440-21-3	Wire Bond	1.430	0.474	14,300	Dietriylerie giş	Epoxy resin	Trade Secret - 10114	19	
Nickel	7440-07-0	Plating on external leads (pins)	1.430	0.090	11,250	1	Epoxy resin	Trade Secret - 10114	9	
Palladium	7440-02-0	Plating on external leads (pins)	0.063	0.004	625		Amine	Trade Secret - 10103	4	
Gold	7440-03-03	Plating on external leads (pins)	0.063	0.004	625	1	Allille	Total	100.00	<u>I</u>
Gold	7440-57-5	TOTAL	0.000	6.300	1,000,000	0.47	Total (mm)			
			5: 100.000	6.300	1,000,000	0.47	Total (mg)	Chip (Die)	% of Total Weight	7.52
	naterials comply with EU Directive	otal Mass 2 2002/95/EC (RoHS Directive), EU Directive 201	1/65/EU (RoHS Red	cast Directive)	and with EU		Doped Silicon	7440-21-3 Total	100 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di	naterials comply with EU Directive irective).		•	cast Directive)	and with EU	0.09	Doped Silicon (mg) Total	7440-21-3		
ve 2002/53/EC (End-of-Life Vehicles (ELV) Di iance with the above EU Directives has beer emical substance is absent from the list abo ology Incorporated's knowledge and belief a cal substance, if any, is not below the thresh	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the hold of regulatory concern for any	e 2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide.	st data. or device and, to the	ne best of Micro concentration	ochip of the	0.09		7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight	1.43
ve 2002/53/EC (End-of-Life Vehicles (ELV) Di iance with the above EU Directives has beer emical substance is absent from the list abo ology incorporated's knowledge and belief a cal substance, if any, is not below the thresh g compounds used by Microchip meet the U	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, though of regulatory concern for any JL94 VO flammability standard for	2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un	st data. or device and, to the	ne best of Micro concentration	ochip of the	0.09	(mg) Total	7440-21-3 Total Wire Bond	100.00 % of Total Weight	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di liance with the above EU Directives has beer emical substance is absent from the list abo lology Incorporated's knowledge and belief a cal substance, if any, is not below the thresh ng compounds used by Microchip meet the U ul.com/global/eng/pages/offerings/industries rotective "tubes" in which the specific produ	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the old of regulatory concern for any JL94 VO flammability standard for s/chemicals/plastics/	e 2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide.	of data. or device and, to the avoidable impurity databases to obtain	ne best of Micro concentration ain a test repor	ochip of the t at	0.09	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di- liance with the above EU Directives has beer emical substance is absent from the list abo- ology Incorporated's knowledge and belief a ical substance, if any, is not below the thresh- ng compounds used by Microchip meet the L ul.com/global/eng/pages/offerings/industries rotective "tubes" in which the specific produ- nd certain "reels" may be made from PVC pla- chip Technology Incorporated believes the in- es in their original packing materials is true a intee the completeness and accuracy of data ial suppliers. Information is often pa aterial suppliers. Information is provided on	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the hold of regulatory concern for any JL94 V0 flammability standard for s/chemicals/plastics/ct is shipped are made from polyastic. Information in this form concerning and correct to the best of its know in this form because it has been crotected from disclosure as trade by as estimates of the average well.	2002/95/EC (RoHS Directive), EU Directive 201 rols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide. plastics. You can access the UL iQTM family of	at data. In device and, to the two idable impurity databases to obtain a second of the two idable impurity in the two idables. It is a second of the two idables in	ne best of Micro concentration ain a test repor e packing slip orated's semic anology Incorp eets provided blocontract asse nt toxic metals	ochip of the t at on the outer conductor orated cannot by raw emblers and	0.08	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di- liance with the above EU Directives has beer emical substance is absent from the list abo loopy Incorporated's knowledge and belief a cal substance, if any, is not below the thresh- ng compounds used by Microchip meet the Lul.com/global/eng/pages/offerings/industries rotective "tubes" in which the specific produ- nd certain "reels" may be made from PVC place is in their original packing materials is true a their original packing materials is often paterial suppliers. Supplier information is often paterial suppliers. Information is provided on estimates do not include trace levels of dop chip Technology Incorporated does not prov-	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the hold of regulatory concern for any JL94 V0 flammability standard for schemicals/plastics/ct is shipped are made from polyastic. Information in this form concerning and correct to the best of its know in this form because it has been corected from disclosure as trade by as estimates of the average we in ants, metals, and non-metal mate ide any warranty, express or implictive.	e 2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide. plastics. You can access the UL iQTM family of vinyl chloride (PVC) plastic. "Window envelope g substances restricted by RoHS in Microchip ledge and belief, as of the date listed in this for compiled based on the ranges provided in Mate secrets and some information may not have b ght of these parts and the average weight of a	of data. or device and, to the control of the cont	ne best of Micro concentration ain a test repor e packing slip of orated's semic inology Incorp eets provided ibcontract asso int toxic metals arts. The exclusive,	ochip of the t at on the outer conductor orated cannot by raw emblers and components.	0.08	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di- liance with the above EU Directives has beer emical substance is absent from the list abo loology Incorporated's knowledge and belief a cal substance, if any, is not below the thresh ng compounds used by Microchip meet the Lul.com/global/eng/pages/offerings/industries rotective "tubes" in which the specific produ nd certain "reels" may be made from PVC place chip Technology Incorporated believes the in les in their original packing materials is true a natee the completeness and accuracy of data ial suppliers. Supplier information is often production estimates do not include trace levels of opposition estimates do not include trace levels of opposition chip Technology Incorporated does not provide to varranties provided by Microchip Technologochip's quotations, sales order acknowledge chip disclaims any duty to notify users of up	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the hold of regulatory concern for any JL94 V0 flammability standard for s/chemicals/plastics/ ict is shipped are made from polytastic. Information in this form concerning and correct to the best of its know in this form because it has been crotected from disclosure as trade by as estimates of the average well ants, metals, and non-metal mate ide any warranty, express or implicogy incorporated and its subsidiates or changes to Material Contestul of the users' reliance on the esult of the users' reliance on the	e 2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide. plastics. You can access the UL iQTM family of vinyl chloride (PVC) plastic. "Window envelope g substances restricted by RoHS in Microchip ledge and belief, as of the date listed in this for compiled based on the ranges provided in Mate secrets and some information may not have b ght of these parts and the average weight of ar rials contained within silicon devices (silicon I ied, with respect to the information provided in	of data. or device and, to the trooldable impurity databases to obtain a second of the control	ne best of Micro concentration ain a test repor e packing slip orated's semicinology Incorp eets provided abcontract assent toxic metals aarts. The exclusive, of sale. These r indirect, cons	ochip of the t at on the outer conductor orated cannot by raw emblers and components.	0.08	(mg) Total (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Di- liance with the above EU Directives has beer emical substance is absent from the list abo loopy Incorporated's knowledge and belief a cal substance, if any, is not below the thresh ng compounds used by Microchip meet the Lul.com/global/eng/pages/offerings/industries rotective "tubes" in which the specific produ nd certain "reels" may be made from PVC place chip Technology Incorporated believes the in seis in their original packing materials is true a nate the completeness and accuracy of data ial suppliers. Supplier information is often py aterial suppliers. Information is provided on estimates do not include trace levels of dop chip Technology Incorporated does not prov ct warranties provided by Microchip Technology crochip's quotations, sales order acknowledge chip disclaims any duty to notify users of up wise, suffered by users or third parties as a re	naterials comply with EU Directive irective). In verified via internal design controve, the chemical substance is NO is of the date of this document, the hold of regulatory concern for any JL94 V0 flammability standard for s/chemicals/plastics/ ict is shipped are made from polytastic. Information in this form concerning and correct to the best of its know in this form because it has been crotected from disclosure as trade by as estimates of the average well ants, metals, and non-metal mate ide any warranty, express or implicogy incorporated and its subsidiates or changes to Material Contestul of the users' reliance on the esult of the users' reliance on the	e 2002/95/EC (RoHS Directive), EU Directive 201 ols, supplier declarations, and /or analytical te T an intentional ingredient in the semiconduct ere is no credible reason to believe that the un regulatory scheme world-wide. plastics. You can access the UL iQTM family of vinyl chloride (PVC) plastic. "Window envelope g substances restricted by RoHS in Microchip' ledge and belief, as of the date listed in this for compiled based on the ranges provided in Mate secrets and some information may not have b ght of these parts and the average weight of ar rials contained within silicon devices (silicon I lied, with respect to the information provided in arries are contained in Microchip's standard tere ent Declarations and shall not be liable for any	of data. or device and, to the trooldable impurity databases to obtain a second of the control	ne best of Micro concentration ain a test repor e packing slip orated's semicinology Incorp eets provided abcontract assent toxic metals aarts. The exclusive, of sale. These r indirect, cons	ochip of the t at on the outer conductor orated cannot by raw emblers and components.	0.08	(mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 90.00	1.43

MICROCHIP Semiconductor Device Type	e: IT 06 4 cost \$C	-70 (ps)		nation Base A	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
- Commoditation Davids Type	5. L1 00 (Lead) 00	"Contained In"	% Total		1			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.79	(mg) Total	Mold Compound	% ot Total Weight	42.97
Silica, vitreous	60676-86-0	Mold Compound	36.525	2.374	365,245		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.053	0.068	10,528		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.129	0.008	1,289		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	7.079	0.460	70,793			Total	100.00	
Iron	7439-89-6	Lead Frame	0.174	0.011	1,741	0.48	(mg) Total	Lead Frame	% of Total Weight	7.41
Silver	7440-22-4	Lead Frame	0.141	0.009	1,412		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.009	0.001	93 61		Iron	7439-89-6	2.35	
Phosphorous Aluminum oxide	7723-14-0 1344-28-1	Lead Frame Die Attach	0.006	0.000	4.236		Silver Zinc	7440-22-4 7440-66-6	1.91 0.13	
Epoxy resin	Trade Secret	Die Attach	0.424	0.028	7.702		Phosphorous	7723-14-0	0.13	
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.046	0.003	463		Filospilolous	Total	100.00	<u>]</u>
Silicon	7440-21-3	Chip (Die)	1.860	0.003	18.600	0.08	(mg) Total	Die Attach	% of Total Weight	1.24
Gold	7440-57-5	Wire Bond	0.210	0.014	2,100	0.06	Aluminum oxide	1344-28-1	34	1.24
Tin		ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	46.310	3.010	463,100		Epoxy resin	Trade Secret	62	
		TOTALS:	100.000	6.500	1.000.000		Amine		4	
	0.0065 g 1	Fotal Mass			1,000,000			Total	100.00	y
is semiconductor device and its homogenous materials com rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			(RoHS Recast	Directive) and	d with EU	0.12	Total (mg)	Chip (Die)	% of Total Weight	1.86
ompliance with the above EU Directives has been verified via i	internal design controls	s supplier declarations, and for analytical test data.					Doped Silicon	7440-21-3	100	
a chemical substance is absent from the list above, the chemi echnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regular	of this document, there	is no credible reason to believe that the unavoidab								
	,	gulatory scheme world-wide.	ic impunty con	centration of	the					
olding compounds used by Microchip meet the UL94 V0 flamn tp://ul.com/global/eng/pages/offerings/industries/chemicals/p	mability standard for pla	•				0.01	(mg) Total	Wire Bond	% of Total Weight	0.21
olding compounds used by Microchip meet the UL94 V0 flamn	mability standard for pla	astics. You can access the UL iQTM family of databa	ases to obtain a	ı test report a	ŧ	0.01	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.21
olding compounds used by Microchip meet the UL94 V0 flamn tp://ul.com/global/eng/pages/offerings/industries/chemicals/p ne protective "tubes" in which the specific product is shipped	mability standard for pla plastics/ l are made from polyvin this form concerning s the best of its knowled because it has been con disclosure as trade set	astics. You can access the UL iQTM family of databases. yl chloride (PVC) plastic. "Window envelopes" used ubstances restricted by RoHS in Microchip Technol ge and belief, as of the date listed in this form. Micr pilled based on the ranges provided in Material Saf crets and some information may not have been pro t of these parts and the average weight of anticipate	ases to obtain a to hold the pa logy Incorporat ochip Technol ety Data Sheets vided by subco	cking slip on ed's semicon ogy Incorpora provided by intract assem exic metals co	t the outer ductor ted cannot raw blers and	0.01				0.21
biding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/industries/chemicals/p ne protective "tubes" in which the specific product is shipped ox and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to inarantee the completeness and accuracy of data in this form baterial suppliers. Supplier information is often protected from w material suppliers. Information is provided only as estimate nese estimates do not include trace levels of dopants, metals, crochip Technology Incorporated does not provide any warra oduct warranties provided by Microchip Technology Incorpor Microchip's quotations, sales order acknowledgement, and in	mability standard for pla plastics/ I are made from polyvin this form concerning s the best of its knowled pecause it has been con a disclosure as trade see es of the average weigh, and non-metal material anty, express or implied rated and its subsidiarie nvoices.	astics. You can access the UL iQTM family of databases of the UL iQTM family of databases of the Indiana service of these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the with respect to the information provided in this design are contained in Microchip's standard terms and	ases to obtain a lito hold the pa logy Incorporat ochip Technoli ety Data Sheets vided by subco ad significant to e finished parts eclaration. The conditions of s	etist report a cking slip on ed's semicon ogy Incorpora provided by ntract assem oxic metals co exclusive, lim ale. These are	the outer ductor sted cannot raw blers and omponents. ited	3.01		7440-57-5	100	0.21 46.31
olding compounds used by Microchip meet the UL94 V0 flamn tp://ul.com/global/eng/pages/offerings/industries/chemicals/p ne protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to narantee the completeness and accuracy of data in this form be atterial suppliers. Supplier information is often protected from w material suppliers. Information is provided only as estimate nese estimates do not include trace levels of dopants, metals, crochip Technology Incorporated does not provide any warra oduct warranties provided by Microchip Technology Incorpor	mability standard for pla plastics/ I are made from polyvin this form concerning so the best of its knowled because it has been com disclosure as trade see es of the average weigh and non-metal material anty, express or implied rated and its subsidiarie nvoices. Inges to Material Content sers' reliance on the inf	astics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastics. "Window envelopes" used ubstances restricted by RoHS in Microchip Technol ge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Saforets and some information may not have been protof these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the with the provided in this desired to the information provided in this desired contained in Microchip's standard terms and Declarations and shall not be liable for any damage	ases to obtain a l to hold the pa logy Incorporat ochip Technol- ety Data Sheets vided by subco- ed significant to e finished parts occlaration. The conditions of s	cking slip on ed's semicon gy Incorpora provided by ntract assem ixic metals cc. exclusive, lim ale. These are	the outer ductor ited cannot raw blers and mponents. ited e provided		Doped Gold	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 100.00 % of Total Weight	
olding compounds used by Microchip meet the UL94 V0 flamm pp://ul.com/global/eng/pages/offerings/industries/chemicals/p to protective "tubes" in which the specific product is shipped x and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form baterial suppliers. Supplier information is often protected from w material suppliers. Information is provided only as estimate ese estimates do not include trace levels of dopants, metals, crochip Technology Incorporated does not provide any warra oduct warranties provided by Microchip Technology Incorpor Microchip's quotations, sales order acknowledgement, and incrochip disclaims any duty to notify users of updates or chan herwise, suffered by users or third parties as a result of the users.	mability standard for pla plastics/ I are made from polyvin this form concerning so the best of its knowled because it has been com disclosure as trade see es of the average weigh and non-metal material anty, express or implied rated and its subsidiarie nvoices. Inges to Material Content sers' reliance on the inf	astics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastics. "Window envelopes" used ubstances restricted by RoHS in Microchip Technol ge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Saforets and some information may not have been protof these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the with the provided in this desired to the information provided in this desired contained in Microchip's standard terms and Declarations and shall not be liable for any damage	ases to obtain a l to hold the pa logy Incorporat ochip Technol- ety Data Sheets vided by subco- ed significant to e finished parts occlaration. The conditions of s	cking slip on ed's semicon gy Incorpora provided by ntract assem ixic metals cc. exclusive, lim ale. These are	the outer ductor ited cannot raw blers and mponents. ited e provided		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 100.00 % of Total Weight	

LT 6 SC-70 7:16 PM : 8/8/2012

AICROCHIP			-	nation Base opper Alloy (0				ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	:: SS 20 (Lead)	• •								es
		"Contained In"	% Total			131.03	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	131.03	,	· ·	-	79.0
Silica, vitreous	60676-86-0	Mold Compound	69.354	113.880	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	10.050	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078 0.247	6.696 0.406	40,778 2,474		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	5.11 0.31	
Carbon Black	1333-86-4	Mold Compound					Carbon Black			<u> </u>
Copper	7440-50-8	Lead Frame	10.031	16.472	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.405	2,468	17.24	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.328	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.022	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.924	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.172	1,050		Phosphorous	7723-14-0	0.08	l
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.092	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.043	263	1.23	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	12.315	75,000		Silver (Ag)	7440-22-4	75.00	1
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	2,000		Modified Epoxy Resin	13561-08-5	14.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.053	12,500	D	glycidylether of bisphenol-F	54208-63-8	7.50	1
		TOTALS:	100.000	164.200	1,000,000		Modified Amine	827-43-0	3.50	
	0.1642	g Total Mass						Total	100.00	
semiconductor device and its homogenous materials completive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			RoHS Recas	t Directive) ai	nd with EU	12.32	(mg) Total	Chip (Die)	% of Total Weight	7.5
pliance with the above EU Directives has been verified via in	ternal design contro	ois, supplier declarations, and for analytical test data.							100	
							Doped Silicon	7440-21-3	100	_
nology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulate	f this document, the ory concern for any	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	e impurity co	ncentration o	of the		Doped Silicon	7440-21-3 Total	100.00	
nnology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulate the discount of the standard of the standard of the standard of the standard of the the standard of the discount of the standard of the stand	f this document, the ory concern for any ability standard for astics/	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databas	e impurity co	ncentration of	of the	0.33	Doped Silicon			0.2
hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulate ding compounds used by Microchip meet the UL94 V0 flamma: ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a	f this document, the ory concern for any ability standard for astics/	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databas	e impurity co	ncentration of	of the	0.33		Total	100.00	0.2
hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulate ding compounds used by Microchip meet the UL94 V0 flamm: ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.	f this document, the ory concern for any ability standard for astics/ ure made from polyv	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used	e impurity co	ncentration of a test report acking slip or	of the	0.33	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
chemical substance is absent from the list above, the chemic hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulated ding compounds used by Microchip meet the UL94 V0 flamm: c://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in the interior of the completeness and accuracy of data in this interior as the completeness and contract as t	f this document, the ry concern for any ability standard for stics/ are made from poly his form concerning he best of its knowl form because it has om disclosure as tra- tates of the average	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used a substances restricted by RoHS in Microchip Technologiedge and belief, as of the date listed in this form. Micros been compiled based on the ranges provided in Mater adde secrets and some information may not have been proveight of these parts and the average weight of anticip	e impurity co ses to obtain to hold the p ngy Incorpora chip Techno ial Safety Dai porovided by s pated signific	a test report acking slip of	at n the outer nductor rated vided by ssemblers als	0.33	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	
hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamm: ://ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in the incomplete of the incomplete in their original packing materials is true and correct to the total guarantee the completeness and accuracy of data in this finaterial suppliers. Supplier information is often protected from a material suppliers. Information is provided only as estimaterial suppliers. Information is provided only as estimaterial suppliers.	f this document, the ry concern for any ability standard for stics/ are made from polyware his form concerning he best of its knowl form because it has om disclosure as tr. lates of the average ants, metals, and no ty, express or impli ted and its subsidia	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used a substances restricted by RoHS in Microchip Technololedge and belief, as of the date listed in this form. Microchip to been compiled based on the ranges provided in Mater are secrets and some information may not have been per weight of these parts and the average weight of anticip on-metal materials contained within silicon devices (silicited, with respect to the information provided in this decided, with respect to the information provided in this decided.	e impurity co ses to obtain to hold the p ngy Incorpora chip Techno ial Safety Dat provided by s pated signific con IC) in the	a test report. acking slip of acking slip of	of the at n the outer inductor rated vided by ssemblers als ts. mited	2.05	(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	
nnology Incorporated's knowledge and belief as of the date of inical substance, if any, is not below the threshold of regulate iling compounds used by Microchip meet the UL94 V0 flamme://ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in the cess in their original packing materials is true and correct to the total guarantee the completeness and accuracy of data in this framaterial suppliers. Supplier information is often protected from a material suppliers. Supplier information is provided only as estimponents. These estimates do not include trace levels of dopatic ochip Technology Incorporated does not provide any warran fluct warranties provided by Microchip Technology Incorporation in the control of the users or third parties as a result of the user wife real to the users or third parties as a result of the user.	f this document, the ry concern for any ability standard for stics/ are made from polywhis form concerning the best of its knowl form because it has om disclosure as tr. states of the average ants, metals, and no ty, express or implifed and its subsidia roices.	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used a graph substances restricted by RoHS in Microchip Technologiedge and belief, as of the date listed in this form. Microbe a been compiled based on the ranges provided in Mater ade secrets and some information may not have been provided in the second materials contained within silicon devices (silicity) in-metal materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon dev	e impurity co ses to obtain to hold the p negy Incorpora ichip Techno ial Safety Dat orovided by s pated signific con IC) in the claration. The onditions of	a test report acking slip of acking slip acking	of the at In the outer Inductor Inductor Intel Intel		(mg) Total Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100.00 100.00 % of Total Weight 100.00	
hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flamm: c://ul.com/global/eng/pages/offerings/industries/chemicals/plap protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in the ices in their original packing materials is true and correct to the integration of the protected for raw material suppliers. Information is provided only as estimponents. These estimates do not include trace levels of doparochip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided	f this document, the ry concern for any ability standard for stics/ are made from polywhis form concerning the best of its knowl form because it has om disclosure as tr. states of the average ants, metals, and no ty, express or implifed and its subsidia roices.	ere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used a graph substances restricted by RoHS in Microchip Technologiedge and belief, as of the date listed in this form. Microbe a been compiled based on the ranges provided in Mater ade secrets and some information may not have been provided in the second materials contained within silicon devices (silicity) in-metal materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon devices (silicity) in the second materials contained within silicon dev	e impurity co ses to obtain to hold the p negy Incorpora ichip Techno ial Safety Dat orovided by s pated signific con IC) in the claration. The onditions of	a test report acking slip of acking slip acking	of the at In the outer Inductor Inductor Intel Intel		(mg) Total Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100.00 100.00 % of Total Weight	

SS 20 SSOP 7:16 PM : 8/8/2012

MICROCHIP				ation Base A	•		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: SS 24 (Lead) SS	OP .209" (J2 / JH)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	121.55	(mg) Total	Mold Compound	% ot Total Weight	t 65.17
Silica, vitreous	60676-86-0	Mold Compound	55.395	103.316	553.945		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917		Epoxy Resin	Trade Secret	6.13	1
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917		Phenolic Resin	Trade Secret	6.13	1
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.597	2.978	15,967		Epoxy, Cresol Novolac	29690-82-2	2.45	1
Carbon Black	1333-86-4	Mold Compound	0.196	0.365	1,955		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	28,222	52.636	282,218		<u> </u>	Total	100.00	리)
Iron	7439-89-6	Lead Frame	0.694	1.295	6.942	55.10	(mg) Total	Lead Frame	% of Total Weight	t 29.54
Silver	7440-22-4	Lead Frame	0.563	1.050	5.627	00.10	Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.037	0.069	369		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.024	0.045	244		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.622	1.159	6,216		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.168	0.313	1,680		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.025	0.047	252		1 Hospitolous	Total	100.00	1
Gamma-butyrolactone	96-48-0	Die Attach	0.025	0.047	252	1.57	() T-4-I			
						1.57	(mg) Total	Die Attach	% of Total Weight	t 0.84
Silicon	7440-21-3	Chip (Die)	2.490	4.644	24,900		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.250	0.466	2,500		Epoxy resin	Trade Secret	20	
Tin	7440-31-5 Plat	ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.710	3.189	17,100		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	186.510	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.1865 g T	Total Mass						Total	100.00)
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	4.64	Total (mg)	Chip (Die)	% of Total Weight	t 2.49
Compliance with the above EU Directives has been verified via	internal design controls	, supplier declarations, and /or analytical test data.			ľ		Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chem Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	of this document, there	is no credible reason to believe that the unavoidabl						Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flam http://ul.com/global/eng/pages/offerings/industries/chemicals/p		astics. You can access the UL iQTM family of database	ses to obtain a	test report at	t	0.47	(mg) Total	Wire Bond	% of Total Weight	t 0.25
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from polyviny	yl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in	this form concerning su	ubstances restricted by RoHS in Microchin Technolo	nav Incornorat	ad's semicon	ductor			Total	100.00	4)
devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form I material suppliers. Supplier information is often protected fron raw material suppliers. Information is provided only as estimat These estimates do not include trace levels of dopants, metals,	o the best of its knowledge because it has been com n disclosure as trade sec es of the average weight	ge and belief, as of the date listed in this form. Micro piled based on the ranges provided in Material Safe rets and some information may not have been prov t of these parts and the average weight of anticipated	ochip Technol ty Data Sheets rided by subco d significant to	ogy Incorpora provided by ntract assemi xic metals co	ited cannot raw blers and					
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpo in Microchip's quotations, sales order acknowledgement, and i	rated and its subsidiarie					3.19	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	t 1.71
Microchip disclaims any duty to notify users of updates or char otherwise, suffered by users or third parties as a result of the u (SGS) or of this Certificate of Compliance for semiconductor pu	sers' reliance on the info					_	Tin	7440-31-5	100.00	
								Total	100.00	<u> </u>

SS 24 SSOP 7:16 PM : 8/8/2012

100.000

186.510

Basic Substance CAS Number SUb-Component Weight mg/part	AICROCHIP Semiconductor Device Type	e: SS and SI 28 (Le:	ad) SSOP .209" (N2 / ND)		nation Base A oper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Select Substantiance CLS Visible Select Components Mod Compound 1, 18,00 1, 12,00				% Total			400.00	() T-4-1	Mald Carrage	0/ -4 T-4-1 W-1-1-4	70.0
Flow Reain No International Hospital Services Flow Reain No International							182.90	,	•	Ţ.	79.8
Productic Read PAS P. C. C. SCO. 30 designation vision(set) Trails & Scott Foundation of the Second Foundation of the Sec											
Sport Horder Newber 1985 4481 19.55 4.811 19.55											
Carbon Black											
Copper											
Fig. 1.50								Carbon black		0.00	
Silver 7440-22-4 Lead Frame 0.13 0.39 131 100 100 140							24.07	(mg) Total			10.5
Znn 1440-66-6 Lead Frame 0.013 0.030 131 September 1572-34-0 Lead Frame 0.003 0.020 87 September 1572-34-0 Lead Frame 0.003 0.020 87 September 1572-34-0 September 157							24.07				10.5
Proceptorous 7723-14-0 Lead Frame 0.099 0.000 87											
Selective (Ag) 7440-224 Die Attach 0.688 1.289 5.625				0.0.0							
Modified Eproxy Resin 15961-08-5 Die Attach 0.056 D.24 1.050 D.24 1.050 Die Attach 0.056 D.24 1.050 D.25 D.24 1.050 D.25											
Dighydrolycleter of hasphenol-F 54208-63-8 Die Attach 0.056 0.129 563 1.72 moni Total Die Attach 575 Die Attach 0.076 0.060 2.35 1.72 moni Total Die Attach 575 575 Die Attach 0.076 0.060 2.35 1.72 moni Total Die Attach 575 Di											
Modified Anima 827-43-0 Die Attach 0.026 0.050 253 1.72 (mg) Total Die Attach 356 756 255 1.72 (mg) Total 1.75 2.75			Die Attach	0.056	0.129	563					
Silicon 7440-21-3 Chip (Die) 7.500 1.7500 1.							1 72	(mg) Total			0.75
Gold 7440-57-5 Wire Bond 10-200 0-458 2,000 Tin 7440-91-6 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed at 167C for 1 tou. 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,885 12,500 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange network label (pin-). Milto Third revealed to 1,250 2,250 1,00,000 1-240-91-15 Prange netw	Silicon	7440-21-3	Chip (Die)	7.500	17.190						00
Tin											
D.229 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/58/EC (End-of-Life Vehicles (ELV) Directive). EU Directive 2002/58/EC (End-of-Life Vehicles (ELV) Directive). Directive 2002/58/EC (End-of-Life Vehicles (ELV) Directive) and with EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. In plane with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. In plane with the above EU Directives has been verified via internal design controls, supplier in the semiconductor device and, to the best of Microchip ment the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ding compounds used by Microchip ment the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ding compounds used by Microchip ment the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ding compounds used by Microchip Technology Incorporated semiconductor covers in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reles" may be made from PVC plastic. Total 100.00 Doped Gold 7440-57-5 100 0.46 (mg) Total Wile Microchip Technology Incorporated cannot relevative of dopands, metals in the form because it has been compiled based on the ranges provided by raw related by internal design control of the supplements and control of anticipated splanificant total remetals components. See estimates of the arregistic provided by raw setting th			ing on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.865	12,500	Dig	lycidylether of bisphenol-F		8	
semiconductor device and its homogenous materials comply with EU Directive). EU Directive 2002/95/EC (End-of-Life Vehicles (EUV) Directive). 17.19 Total (mg) Chip (Die) % of Total Weight 7.5 philosophy (END protective). Total 100.00 philosophy (EUV) Directive). Total 100.00 philosophy (EVV) Directive). Total 100.00 philosophy (END protective). Total 100.00 philosophy (EVV) Directive). Total 100.00 philosophy (END protective). EUV protective (END protective). EVV protective (END protective). EVV protective). EVV protective (END protective). EVV protective (END protective). EVV protective). EVV protective). EVV protective (END protective). EVV protective (END protective). EVV protective). EVV protective (END protective			TOTALS:	100.000	229.200	1,000,000	_	Modified Amine	827-43-0	4	
s semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 17.19 Total (mg) Chip (Die)		0.2292 g T	otal Mass						Total	100.00	,
chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip hology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the microchip ding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at confunction of the microchip flam of the packing slip on the outer and certain "reels" may be made from PVC plastic. Doped Gold T440-57-5 100 100.00	s semiconductor device and its homogenous materials com								. 0		
cochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor close in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated by subcontract assemblers and material suppliers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of until closed significant toxic metals combined by Microchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited duct warranties provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited duct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided incorchip Technology Incorporated and its subsidiaries ar	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	, ,	(RoHS Recast	Directive) and	d with EU	17.19	1	Chip (Die)		7.5
and certain "reels" may be made from PVC plastic. Total 100.00 Total 1	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology Incorporated's knowledge and belief as of the date	nternal design controls, cal substance is NOT a of this document, there	supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor devicis no credible reason to believe that the unavoidab	e and, to the bo	est of Microch	ıip	17.19	1	Chip (Die) 7440-21-3	100	7.5
rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot rearries the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw erial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. see estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Tochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited duct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided leads (pins) - Matter Tin / annealed at 150°C for 1 / annealed at 150°C for 1 / annealed at 150°C for 1 / hour. Tochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or revise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports S) or of this Certificate of Compliance for semiconductor products.	nctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if sknowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamr	nternal design controls, cal substance is NOT ar of this document, there tory concern for any reg nability standard for pla	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab gulatory scheme world-wide.	e and, to the bo	est of Microch	lip the		Doped Silicon	Chip (Die) 7440-21-3 Total	100	
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Total 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the chemichology Incorporated's knowledge and belief as of the date imical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamm: Ci/lul.com/global/eng/pages/offerings/industries/chemicals/peptotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in icies in their original packing materials is true and correct to trantee the completeness and accuracy of data in this form beterial suppliers. Supplier information is often protected from material suppliers. Supplier information is provided only as estimates es estimates do not include trace levels of dopants, metals, prochip Technology Incorporated does not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties provided by Microchip Technology Incorporated dues not provide any warraduct warranties p	nternal design controls, cal substance is NOT arof this document, there tory concern for any reg nability standard for pla lastics/ are made from polyviny this form concerning st the best of its knowled, ecause it has been com disclosure as trade see so of the average weight and non-metal material inty, express or implied, ated and its subsidiaries	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab gulatory scheme world-wide. Stics. You can access the UL iQTM family of databated in the control of t	e and, to the bele impurity con- ses to obtain a to hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subco d significant to finished parts claration. The	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpore provided by ntract assem uxic metals co	t t the outer ductor ited cannot raw blers and imponents.	0.46	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100 100.00	0.2
	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via it chemical substance is absent from the list above, the cheminology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamm: ///ul.com/global/eng/pages/offerings/industries/chemicals/p protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form be erial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warra fuct warranties provided by Microchip Technology Incorpor icrochip's quotations, sales order acknowledgement, and in orwise, suffered by users or third parties as a result of the users.	nternal design controls, cal substance is NOT are of this document, there tory concern for any regnability standard for pla lastics/ are made from polyviny this form concerning suthe best of its knowled, ecause it has been com disclosure as trade secs of the average weight and non-metal material inty, express or implied, ated and its subsidiaries voices. ges to Material Content sers' reliance on the info	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab gulatory scheme world-wide. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab gulatory scheme world-wide. It is in it in it is in it is in it is in it in it is in it in it is in it in it in it in it is in it in it in it in it is in it i	e and, to the bile impurity consists to obtain a to hold the pa ogy incorporation ochip Technolity Data Sheets vided by subcodiding inficant to finished parts claration. The conditions of sets, direct or ince	est of Microch icentration of itest report a cking slip on ed's semicon ogy Incorpora provided by intract assem poixic metals co- exclusive, lim ale. These are	t the outer ductor ated cannot raw blers and mponents. ited a provided	0.46	Doped Silicon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

SS SI 28 SSOP 7:17 PM: 8/8/2012

AICROCHIP Semiconductor Devi	ce Type: WHE 32 TSOP 8x1	4mm (W6)		ination Base opper Alloy (•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	199.26	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	11.956	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.598	2.394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.000	24.971	100,003			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.267	0.666	2.667	26.22	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-21-3	Lead Frame	0.047	0.118	473	LUILL	Copper	7440-50-8	95.24	10.0
Magnesium	7439-95-4	Lead Frame	0.011	0.026	105		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.175	0.438	1.752		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.600	1,498	6,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.023	0.056	225			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	18.728	75,000	1.87	(mg) Total	Die Attach	% of Total Weight	0.75
Doped Gold	7440-57-5	Wire Bond	0.200	0.499	2,000		Silver	7440-22-4	80.00	00
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500		Epoxy Resin	Trade Secret	17.00	
***		TOTALS:		249.700	1,000,000		Copper	7440-50-8	3.00	
	0.2497 g Tota				,,			Total	100.00	
	e).					18.73	(mg) Total	Chip (Die)	% of Total Weight	7.5
· chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th	ied via internal design controls, sup e chemical substance is NOT an inte ne date of this document, there is no	entional ingredient in the semiconductor device o credible reason to believe that the unavoidable					Silicon	7440-21-3 Total	100 100.00	7.3
. chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V	e cled via internal design controls, sup e chemical substance is NOT an inte ne date of this document, there is no f regulatory concern for any regulate to flammability standard for plastics	entional ingredient in the semiconductor device o credible reason to believe that the unavoidable ory scheme world-wide.	e impurity co	oncentration	of the	0.50		7440-21-3	100	0.2
. themical substance is absent from the list above, the nnology Incorporated's knowledge and belief as of th nical substance, if any, is not below the threshold of fing compounds used by Microchip meet the UL94 V thul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is s	e cled via internal design controls, sup e chemical substance is NOT an inte te date of this document, there is no f regulatory concern for any regulate (0 flammability standard for plastics nicals/plastics/	entional ingredient in the semiconductor device o credible reason to believe that the unavoidable ory scheme world-wide. s. You can access the UL iQTM family of database	e impurity co	oncentration on a test report	of the		Silicon	7440-21-3 Total	100	
npliance with the above EU Directives has been verifications and compounds and belief as of the mical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V:://ul.com/global/eng/pages/offerings/industries/chemptorective "tubes" in which the specific product is and certain "reels" may be made from PVC plastic.	e cled via internal design controls, sup e chemical substance is NOT an inte he date of this document, there is no f regulatory concern for any regulate (0 flammability standard for plastics hicals/plastics/ hipped are made from polyvinyl chl	entional ingredient in the semiconductor device or credible reason to believe that the unavoidable ory scheme world-wide. b. You can access the UL iQTM family of database or the control of the control	e impurity co	oncentration of a test report	of the at on the outer		Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vo.//ul.com/global/eng/pages/offerings/industries/chem.	ied via internal design controls, sup e chemical substance is NOT an inte te date of this document, there is no i regulatory concern for any regulator (0 flammability standard for plastics nicals/plastics/ hipped are made from polyvinyl chl ation in this form concerning substarrect to the best of its knowledge are if form because it has been compilece def from disclosure as trade secrets estimates of the average weight of the	entional ingredient in the semiconductor device to credible reason to believe that the unavoidable ory scheme world-wide. 5. You can access the UL iQTM family of databast loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technoloid belief, as of the date listed in this form. Micro did based on the ranges provided in Material Safe and some information may not have been provises parts and the average weight of anticipates.	e impurity co ses to obtain to hold the p ogy Incorpor- ochip Technot ty Data Shee ided by subo d significant	a test report acking slip o ated's semice ology Incorpo ts provided b contract asset toxic metals	at on the outer onductor orated cannot by raw mblers and	0.50	Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Voc.//ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is a nad certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informatices in their original packing materials is true and corantee the completeness and accuracy of data in this certail suppliers. Supplier information is often protect material suppliers. Information is provided only as ematerial suppliers.	del via internal design controls, sup a chemical substance is NOT an interest and the date of this document, there is not regulatory concern for any regulator (0 flammability standard for plastics incals/plastics/) thipped are made from polyvinyl chlastion in this form concerning substarrect to the best of its knowledge are form because it has been compiled of from disclosure as trade secrets sistimates of the average weight of it sof dopants, metals, and non-metal y warranty, express or implied, with corporated and its subsidiaries are	entional ingredient in the semiconductor device or credible reason to believe that the unavoidable ory scheme world-wide. S. You can access the UL iQTM family of databast doride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technoloid belief, as of the date listed in this form. Micro dib based on the ranges provided in Material Safe and some information may not have been provinces parts and the average weight of anticipated I materials contained within silicon devices (silicon respect to the information provided in this decimal provi	e impurity co ses to obtain to hold the p ogy Incorpora chip Techno ty Data Shee ided by subo d significant icon IC) in the claration. The	a test report acking slip o ated's semice ology Incorpo ts provided b contract asset toxic metals e finished pa e exclusive, li	at on the outer conductor orated cannot by raw mblers and rts. imited	0.50	Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Virill.com/global/eng/pages/offerings/industries/chep protective "tubes" in which the specific product is a rand certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this rerial suppliers. Supplier information is often protect material suppliers. Supplier information is provided only as enponents. These estimates do not include trace levels trochip Technology Incorporated does not provide and duct warranties provided by Microchip Technology Incorporated does not provide and	ied via internal design controls, sup e chemical substance is NOT an inte te date of this document, there is no f regulatory concern for any regulate (0 flammability standard for plastics nicals/plastics/ hipped are made from polyvinyl chl attion in this form concerning substar rect to the best of its knowledge and is form because it has been compiled ed from disclosure as trade secrets estimates of the average weight of the sof dopants, metals, and non-metal y warranty, express or implied, with nocorporated and its subsidiaries are to, and invoices.	entional ingredient in the semiconductor devices or credible reason to believe that the unavoidable ory scheme world-wide. b. You can access the UL iQTM family of databast loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technolo de belief, as of the date listed in this form. Microchip design and some information may not have been provese parts and the average weight of anticipated in materials contained within silicon devices (silicontained in Microchip's standard terms and contained in Microchip's standard terms and carations and shall not be liable for any damage	e impurity co ses to obtain to hold the p ogy Incorpor- ochip Techno ty Data Shee ided by subd d significant icon IC) in the claration. The conditions of	a test report acking slip o ated's semico slogy Incorpo ts provided b contract asse e finished pa e exclusive, li sale. These a	at In the outer Inductor Inductor	0.50	Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 100.00 % of Total Weight 100.00 100.00	0.2
chemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of ling compounds used by Microchip meet the UL94 V.//ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is s and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informaces in their original packing materials is true and coantee the completeness and accuracy of data in this arial suppliers. Supplier information is often protect material suppliers. Supplier information is often protect material suppliers. Information is provided only as a ponents. These estimates do not include trace level: ochip Technology Incorporated does not provide and luct warranties provided by Microchip Technology Ir icrochip's quotations, sales order acknowledgement ochip disclaims any duty to notify users of updates rwise, suffered by users or third parties as a result of	ied via internal design controls, sup e chemical substance is NOT an inte te date of this document, there is no f regulatory concern for any regulate (0 flammability standard for plastics nicals/plastics/ hipped are made from polyvinyl chl attion in this form concerning substar rect to the best of its knowledge and is form because it has been compiled ed from disclosure as trade secrets estimates of the average weight of the sof dopants, metals, and non-metal y warranty, express or implied, with nocorporated and its subsidiaries are to, and invoices.	entional ingredient in the semiconductor devices or credible reason to believe that the unavoidable ory scheme world-wide. b. You can access the UL iQTM family of databast loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technolo de belief, as of the date listed in this form. Microchip design and some information may not have been provese parts and the average weight of anticipated in materials contained within silicon devices (silicontained in Microchip's standard terms and contained in Microchip's standard terms and carations and shall not be liable for any damage	e impurity co ses to obtain to hold the p ogy Incorpor- ochip Techno ty Data Shee ided by subd d significant icon IC) in the claration. The conditions of	a test report acking slip o ated's semico slogy Incorpo ts provided b contract asse e finished pa e exclusive, li sale. These a	at In the outer Inductor Inductor	0.50	Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 100.00 % of Total Weight 100.00 % of Total Weight	0.2

WHE 32 TSOP 7:17 PM : 8/8/2012

AICROCHIP			-	ination Base opper Alloy (. ,		•	ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Production Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: EIE 40 TSOP 10x	20mm (W8)								•
		"Contained In"	% Total			309.52	(mg) Total	Mold Compound	% ot Total Weight	67.2
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	000.02				···-
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.120	263.095	571,200		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	5.846 4.032	26.929 18.571	58,464 40.320		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	8.70 6.00	
Carbon Black	1333-86-4	Mold Compound	0.202	0.929	2.016		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26,248	120,900	262.484		Carbon Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	0.700	3,224	7,000	126.94	(mg) Total	Lead Frame	% of Total Weight	27.56
Silicon	7440-21-3	Lead Frame	0.124	0.571	1,240	120.94	Copper	7440-50-8	95,24	27.30
Magnesium	7439-95-4	Lead Frame	0.028	0.127	276		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.460	2.119	4.600		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.360	1.658	3,600		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.077	0.352	765		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.014	0.062	135			Total	100.00	ļ!
Silicon	7440-21-3	Chip (Die)	1.900	8.751	19,000	2.07	(mg) Total	Die Attach	% of Total Weight	0.45
Doped Gold	7440-57-5	Wire Bond	0.280	1.290	2,800		Silver	7440-22-4	80.00	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.610	12.022	26,100		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	460.600	1,000,000		Copper	7440-50-8	3.00	
pliance with the above EU Directives has been verified					1		Silicon	7440-21-3	100	
neighbors substance is absent from the list above, the c hnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of re	date of this document, there is							Total	100.00	l
hnology Incorporated's knowledge and belief as of the	date of this document, there is egulatory concern for any regula flammability standard for plastic	no credible reason to believe that the unavoidable atory scheme world-wide.	e impurity co	ncentration o	of the	1.29	(mg) Total	Total Wire Bond		0.28
hnology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of re ding compounds used by Microchip meet the UL94 V0 f	date of this document, there is a gulatory concern for any regulations and the standard for plasticals/plastics/	no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databas	e impurity co	a test report	of the	1.29	(mg) Total Doped Gold	Wire Bond 7440-57-5	100.00 % of Total Weight	0.28
nnology Incorporated's knowledge and belief as of the onlical substance, if any, is not below the threshold of red ting compounds used by Microchip meet the UL94 V0 for it is used by Microchip meet the UL94 V0 for it is used in the used in the use of th	date of this document, there is a gulatory concern for any regulation of the standard for plastic als/plastics/ piped are made from polyvinyl con in this form concerning subsect to the best of its knowledge orm because it has been compile from disclosure as trade secret imates of the average weight of	no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databas hloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safet is and some information may not have been provithese parts and the average weight of anticipated	e impurity co ses to obtain to hold the p gy Incorpora chip Techno ty Data Sheet ded by subc I significant t	a test report acking slip or ated's semico logy Incorpor is provided by ontract assen toxic metals of	of the at n the outer anductor rated cannot y raw nblers and	1.29	1	Wire Bond 7440-57-5 Total	100.00 % of Total Weight	0.28
nnology Incorporated's knowledge and belief as of the enical substance, if any, is not below the threshold of realing compounds used by Microchip meet the UL94 V0 fidulcom/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic ces in their original packing materials is true and correrantee the completeness and accuracy of data in this foreial suppliers. Supplier information is often protected material suppliers. Information is provided only as esti	date of this document, there is a gulatory concern for any regular flammability standard for plastic als/plastics/ pped are made from polyvinyl con in this form concerning subsect to the best of its knowledge from disclosure as trade secret imates of the average weight of stals, and non-metal materials covarranty, express or implied, with proporated and its subsidiaries as	no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databas shloride (PVC) plastic. "Window envelopes" used that the stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Microed based on the ranges provided in Material Safet is and some information may not have been provithese parts and the average weight of anticipated ontained within silicon devices (silicon IC) in the text respect to the information provided in this decitation.	e impurity co ses to obtain to hold the p gy Incorpora chip Techno ty Data Sheet ded by subc I significant to finished part	a test report acking slip or ated's semico logy Incorpor is provided by ontract assentoxic metals cost.	at n the outer inductor rated cannot y raw phelers and components.	1.29	1	Wire Bond 7440-57-5	100.00 % of Total Weight	0.28

EIE 40 TSOP 7:17 PM: 8/8/2012

MICROCHIP Semiconductor Dev	ice Type: EKE 48 TS0	OP 12x20mm (W9)		nation Base opper Alloy (0	-			ogeneous Materials: .g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part		377.31	(mg) Total	Mold Compound	% ot Total Weight	66.84
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.814	320,715	ppm 568.140		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound Mold Compound	5.815	320.715	58,151		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.010	22.639	40.104		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.201	1.132	2,005		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.982	152.312	269.818		- Carbon Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	0.720	4.062	7,196	159.92	(mg) Total	Lead Frame	% of Total Weight	28.33
Silicon	7440-21-3	Lead Frame	0.127	0.720	1,275	100.02	Copper	7440-50-8	95,24	20.00
Magnesium	7439-95-4	Lead Frame	0.028	0.160	283		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.473	2.669	4.728		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.304	1.716	3,040		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.065	0.365	646		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.011	0.064	114		-	Total	100.00	•
Silicon	7440-21-3	Chip (Die)	1.380	7.790	13,800	2.15	(mg) Total	Die Attach	% of Total Weight	0.38
Doped Gold	7440-57-5	Wire Bond	0.320	1.806	3,200		Silver	7440-22-4	80.00	****
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	15.524	27.500		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	564.500	1,000,000		Copper	7440-50-8	3.00	
his semiconductor device and its homogenous material		g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65	/EU (RoHS R	ecast Directiv	re) and with		(m) Total	Total	100.00	
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been verifications with the above EU Directives has been verifications.	s comply with EU Directive 2 ctive). ed via internal design control	2002/95/EC (RoHS Directive), EU Directive 2011/65	ta.		·	7.79	(mg) Total Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100	1.38
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive shas been verific a chemical substance is absent from the list above, the echnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 V	s comply with EU Directive 2 ctive). ed via internal design control chemical substance is NOT e date of this document, ther regulatory concern for any ro 0 flammability standard for p	Journal of the superior of the	ta. vice and, to table impurit	the best of Mi y concentrati	crochip on of the	7.79	·	Chip (Die) 7440-21-3	% of Total Weight	1.38
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directompliance with the above EU Directives has been verificated and the list above, the echnology Incorporated's knowledge and belief as of the themical substance, if any, is not below the threshold of	s comply with EU Directive 2 ctive). ed via internal design control chemical substance is NOT e date of this document, ther regulatory concern for any ru 0 flammability standard for process icals/plastics/	Journal of the state of the sta	ta. vice and, to table impurit	the best of Mi y concentrati	crochip on of the port at		Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive problems (ELV) Directives has been verificated and the list above, the echnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 Vittp://ul.com/global/eng/pages/offerings/industries/chemiche protective "tubes" in which the specific product is sl	s comply with EU Directive 2 ctive). ed via internal design control chemical substance is NOT educate of this document, ther regulatory concern for any real of flammability standard for proceedings of the concerning of the concerning of the concerning of the concerning in this form because it has in this form because it has contected from disclosure as a conded only as estimates of the	2002/95/EC (RoHS Directive), EU Directive 2011/65 Is, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide. plastics. You can access the UL iQTM family of dat anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Tech dge and belief, as of the date listed in this form. Me been compiled based on the ranges provided in Mi trade secrets and some information may not have he average weight of these parts and the average	ta. vice and, to table impurit tabases to ol sed to hold the nology Incordiction Technique licrochip Technique aterial Safet been provid weight of an	the best of Mi y concentration otain a test repacking sli porated's sen chology Inco y Data Sheets ed by subcon ticipated sign	p on the niconductor rporated provided tract ificant toxic		Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Directives and been verificated in the above EU Directives has been verificated in the above EU Directives has been verificated in the above in the list above, the rechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 Vittp://ul.com/global/eng/pages/offerings/industries/chemical in the specific product is structer box and certain "reels" may be made from PVC platicrochip Technology Incorporated believes the information in the product in their original packing materials is true and corporation in the completeness and accuracy of data by raw material suppliers. Supplier information is often pussemblers and raw material suppliers. Information is princetals components. These estimates do not include tractional interaction in the product warranties provided by Microchip Technology Incorporated does not provide any provided in Microchip's quotations, sales order acknowless.	s comply with EU Directive 2 ctive). ed via internal design control chemical substance is NOT e date of this document, ther regulatory concern for any ru 0 flammability standard for picals/plastics/ hipped are made from polyvistic. tion in this form concerning rect to the best of its knowle in this form because it has a rotected from disclosure as a covided only as estimates of the levels of dopants, metals, a comportance of the corporated and its subsidiaried gement, and invoices.	2002/95/EC (RoHS Directive), EU Directive 2011/65 Is, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic regulatory scheme world-wide. Idastics. You can access the UL iQTM family of dat anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Tech dge and belief, as of the date listed in this form. Me been compiled based on the ranges provided in Mitrade secrets and some information may not have the average weight of these parts and the average and non-metal materials contained within silicon could, with respect to the information provided in this ties are contained in Microchip's standard terms a	ta. vice and, to be a lable impurited a labases to old a	the best of Mi y concentration betain a test repeated in a test repeat	p on the niconductor rporated provided tract ifficant toxic nished e, limited		Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive properties of a chemical substance is absent from the list above, the rechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chemical substance in the compounds used by microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chemical substance in the certain "reels" may be made from PVC plater box and certain "reels" may be made from PVC plater box and certain "reels" may be made from PVC plater box and certain "reels" may be made from PVC plater interiorized in their original packing materials is true and corpannot guarantee the completeness and accuracy of data by raw material suppliers. Supplier information is often pussemblers and raw material suppliers. Information is princetals components. These estimates do not include trace later. Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated for the later in the provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Incorporated does not provided by Microch	s comply with EU Directive 2 ctive). ed via internal design control chemical substance is NOT e date of this document, ther regulatory concern for any re 0 flammability standard for p icals/plastics/ hipped are made from polyvirstic. tion in this form concerning rect to the best of its knowle a in this form because it has in this form because it has in ordected from disclosure as woulded only as estimates of the levels of dopants, metals, and warranty, express or implied corporated and its subsidiarity edgement, and invoices.	2002/95/EC (RoHS Directive), EU Directive 2011/65 Is, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide. plastics. You can access the UL iQTM family of dat myl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Tech dge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M trade secrets and some information may not have he average weight of these parts and the average and non-metal materials contained within silicon c ud, with respect to the information provided in this lies are contained in Microchip's standard terms a mt Declarations and shall not be liable for any dan reliance on the information in Material Content De	ta. vice and, to be a label impurition to be a labases to old the sed to hold	the best of Mi y concentration otain a test repart of the packing sli porated's senthnology Inco y Data Sheets ed by subcon ticipated sign on IC) in the fi	p on the niconductor reporated provided tract ifficant toxic inished e, limited se are	1.81	Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.32

EKE 48-TSOP 7:17 PM : 8/8/2012

MICROCHIP				nation Base A	,		•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: TO and ZB 03 (Lead	i) TO-92 (A2 / AU)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	114.11	(mg) Total	Mold Compound	% ot Total Weight	56.77
Silica, vitreous	60676-86-0	Mold Compound	48.255	96.992	482,545		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.391	2.796	13,909		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.170	0.342	1,703		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.024	76.428	380,239			Total		
Iron	7439-89-6	Lead Frame	0.935	1.880	9,353	80.00	(mg) Total	Lead Frame	% of Total Weight	39.8
Silver	7440-22-4	Lead Frame	0.758	1.524	7,582		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.050	0.100	498		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.033	0.066	328		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.066	0.134	664		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.017	0.034	169		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.006	0.011	57			Total	100.00	•
Phenolic hardener	92-88-6	Die Attach	0.000	0.001	3	0.18	(mg) Total	Die Attach	% of Total Weight	0.09
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.001	7		Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	0.800	1.608	8,000		Epoxy Resin	9003-36-5	19	
Gold	7440-57-5	Wire Bond	0.040	0.080	400	t	-Butyl phenyl glycidyl ether	3101-60-8	6	
Tin	7440-31-5 Plating of	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.500	5.025	25,000		Phenolic hardener	92-88-6	0	
		TOTALS:	100.000	201.000	1,000,000		Butyl cellosolve acetate	112-07-2	1	
	0.2010 g Tot	tal Mass						Total	100.00	•
is semiconductor device and its homogenous materials com rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	.,	/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.61	Total (mg)			
mpliance with the above EU Directives has been verified via	internal design controls, su	upplier declarations, and /or analytical test data.				1.01	Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.8
empliance with the above EU Directives has been verified via	internal design controls, so	upplier declarations, and /or analytical test data.				1.01	1	7440-21-3	100	0.8
a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula	ical substance is NOT an ir of this document, there is atory concern for any regula	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide.	e impurity con	centration of	the	1.01	1	,	100	0.8
a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date	ical substance is NOT an ir of this document, there is atory concern for any regula mability standard for plasti	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide.	e impurity con	centration of	the	0.08	1	7440-21-3	100	0.8
. a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula biding compounds used by Microchip meet the UL94 V0 flam	ical substance is NOT an ir of this document, there is atory concern for any regula mability standard for plastic plastics/	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databa	e impurity con	centration of	the t		Doped Silicon	7440-21-3 Total	100	
a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula blding compounds used by Microchip meet the UL94 V0 flamitp://ul.com/global/eng/pages/offerings/industries/chemicals/pages/	ical substance is NOT an ir of this document, there is a story concern for any regular mability standard for plastical are made from polyvinyl cathis form concerning substantials the best of its knowledge because it has been compiled in disclosure as trade secret of the average weight of	thentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microted based on the ranges provided in Material Safets and some information may not have been provitees parts and the average weight of anticipater.	e impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technolo ty Data Sheets ided by subco d significant to	test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem uxic metals cc	the t the outer ductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula biding compounds used by Microchip meet the UL94 V0 flami pp://ul.com/global/eng/pages/offerings/industries/chemicals/per protective "tubes" in which the specific product is shipped ax and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form the aterial suppliers. Supplier information is often protected from w material suppliers. Information is provided only as estimate	ical substance is NOT an ir of this document, there is a tory concern for any regular mability standard for plastical are made from polyvinyl cathis form concerning subsorthe best of its knowledge because it has been compil n disclosure as trade secret es of the average weight of and non-metal materials canty, express or implied, wirated and its subsidiaries a	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technologand belief, as of the date listed in this form. Microthed based on the ranges provided in Material Safets and some information may not have been provides and some information may not have been provides and the average weight of anticipate contained within silicon devices (silicon IC) in the lith respect to the information provided in this deith respect to the information provided in this deither the seminary of the seminary	e impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technolo ty Data Sheets ided by subco d significant to finished parts claration. The	centration of test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem ntract assem xic metals co	the the outer ductor ted cannot raw blers and imponents.		Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
a chemical substance is absent from the list above, the chem chnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of regula biding compounds used by Microchip meet the UL94 V0 flamip://ul.com/global/eng/pages/offerings/industries/chemicals/pee protective "tubes" in which the specific product is shipped in a certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct to arantee the completeness and accuracy of data in this form the sterial suppliers. Supplier information is often protected from we material suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, metals, crochip Technology Incorporated does not provide any warrandouct warranties provided by Microchip Technology Incorporated double in the sterial suppliers.	ical substance is NOT an ir of this document, there is a tory concern for any regular mability standard for plastical are made from polyvinyl cathis form concerning subsorted because it has been compiled disclosure as trade secret in disclosure as trade secret of the average weight of and non-metal materials canty, express or implied, wirated and its subsidiaries an invoices.	Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Microcled based on the ranges provided in Material Safets and some information may not have been provides and some information may not have been provides and some information provided in this derivational within silicon devices (silicon IC) in the with respect to the information provided in this dere contained in Microchip's standard terms and concluded in Microchip's standard terms and section and shall not be liable for any damage.	e impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technoli ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s	test report at cking slip on ed's semicon ogy Incorpora provided by ntract assem wisc metals concerned by the control of the c	the outer ductor sted cannot raw blers and omponents. itted e provided	0.08	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.04
chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regula ding compounds used by Microchip meet the UL94 V0 flamiciful.com/global/eng/pages/offerings/industries/chemicals/p. protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in ices in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form terial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals, rochip Technology Incorporated does not provide any warraduct warranties provided by Microchip Technology Incorpor licrochip's quotations, sales order acknowledgement, and in rochip disclaims any duty to notify users of updates or char previse, suffered by users or third parties as a result of the u	ical substance is NOT an ir of this document, there is a tory concern for any regular mability standard for plastical are made from polyvinyl cathis form concerning subsorted because it has been compiled disclosure as trade secret in disclosure as trade secret of the average weight of and non-metal materials canty, express or implied, wirated and its subsidiaries an invoices.	Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of databath chloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Microcled based on the ranges provided in Material Safets and some information may not have been provides and some information may not have been provides and some information provided in this derivational within silicon devices (silicon IC) in the with respect to the information provided in this dere contained in Microchip's standard terms and concluded in Microchip's standard terms and section and shall not be liable for any damage.	e impurity con ses to obtain a to hold the pa ogy Incorporat ochip Technoli ty Data Sheets ided by subco d significant to finished parts claration. The conditions of s	test report at cking slip on ed's semicon ogy Incorpora provided by ntract assem wisc metals concerned by the control of the c	the outer ductor sted cannot raw blers and omponents. itted e provided	0.08	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 % of Total Weight 100.00	0.04

TO ZB 3 TO-92 7:17 PM : 8/8/2012

ROCHIP	T 4D 00	70.000		nation Base / pper Alloy (C				ogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: AB 03 (Lead)									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	536.44	(mg) Total	Mold Compound	% ot Total Weight	28.38
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.922	17.434	9,224		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.851	16.093	8,514		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.277	24.140	12,771		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.071	1.341	710		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.284	5.364	2,838		Undeclared	Trade Secret	1.00	<u> </u>
Copper	7440-50-8	Lead Frame	68.874	1301.860	688,742			Total	100.00	
Tin	7440-31-5	Lead Frame	0.116	2.193	1,160	1329.38	(mg) Total	Lead Frame	% of Total Weight	70.33
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628		Tin	7440-31-5	0.17	4
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045	24			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.600	11.341	6,000	1.51	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.050	0.945	500		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.560	10.585	5,600		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,890.200	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	1.8902	a Total Mass						Total	100.00	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) an	d with EU	11.34	Total (mg)	Chip (Die)	% of Total Weight	0.6
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified	l via internal design cont	re 2002/95/EC (RORS Directive), EU Directive 2017/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device		·		11.34	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	100	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the cology Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of re	I via internal design cont hemical substance is No date of this document, the gulatory concern for an flammability standard fo	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device the incredible reason to believe that the unavoidable	e and, to the be	est of Microck	nip the	0.95		7440-21-3	100	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the clogy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of regroups of the compounds used by Microchip meet the UL94 Volcom/global/eng/pages/offerings/industries/chemic	I via internal design cont hemical substance is NO date of this document, the gulatory concern for an flammability standard fo als/plastics/	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the be le impurity cor ses to obtain a	est of Microch ncentration of a test report a	nip the		Doped Silicon	7440-21-3 Total	100	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the clogy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of regrompounds used by Microchip meet the UL94 V0 (Lcom/global/eng/pages/offerings/industries/chemic productive "tubes" in which the specific product is ship did certain "reels" may be made from PVC plastic. In Technology Incorporated believes the informatic in their original packing materials is true and corrected the completeness and accuracy of data in this fell suppliers. Supplier information is often protected terial suppliers. Information is provided only as est	I via internal design continuous internal design continuous internal design continuous internal design content internal design	crols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable y regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databa	e and, to the ble impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to	est of Microcl ncentration of a test report a cking slip on ed's semicor ogy Incorpors provided by ontract assem oxic metals cc	the t the outer ductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.05
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the clogy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of real compounds used by Microchip meet the UL94 Vol. L.com/global/eng/pages/offerings/industries/chemic attentive "tubes" in which the specific product is ship at certain "reels" may be made from PVC plastic. In Technology Incorporated believes the informatic in their original packing materials is true and corrected the completeness and accuracy of data in this for a suppliers. Supplier information is often protected trial suppliers. Information is provided only as est settimates do not include trace levels of dopants, meaning Technology Incorporated does not provide any only the control of the provide and t	I via internal design continuous design continuo	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable pregulatory scheme world-wide. It plastics. You can access the UL iQTM family of databative the companient of the province of the companient of the companien	e and, to the ble impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts claration. The	est of Microcl ncentration of a test report a cking slip on ed's semicor ogy Incorpora s provided by outract assem oxic metals co	t the outer ductor ated cannot raw blers and omponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.05
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified in the list above, the clogy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of region of the list above, the clogy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of region of the list and supplied by Microchip meet the UL94 VO L.com/global/eng/pages/offerings/industries/chemic of the list and	I via internal design continuous continuous to the design continuous to the design continuous to the design and	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable pregulatory scheme world-wide. It plastics. You can access the UL iQTM family of databate and the companient of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the colled, with respect to the information provided in this declined, with respect to the information provided in this declined.	e and, to the bile impurity conses to obtain a to hold the part to hold th	est of Microch ncentration of a test report a cking slip on eed's semicor ogy Incorpora s provided by intract assem oxic metals con contract assem oxic metals con ale. These ar	t the outer ductor rated cannot raw blers and omponents.	0.95	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100	0.05

AB 3 TO-220 7:17 PM : 8/8/2012

MICROCHIP Semiconductor Device	Type: AT 05 (Lead)	TO 220 (Pe)		nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device	ype. Ai 05 (Leau)	"Contained In"	% Total		1			I I		63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	526.92	(mg) Total	Mold Compound	% ot Total Weight	26.56
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233,728		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8,632		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7,968		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11,952		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.266	5.269	2,656	اِ	Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	70.627	1401.171	706,271			Total	100.00	
Tin Silver	7440-31-5	Lead Frame	0.119	2.361	1,190	1430.79	(mg) Total	Lead Frame	% of Total Weight	72.12
Silver Silver (Ag)	7440-22-4 7440-22-4	Lead Frame Die Attach	1.374 0.071	27.257 1.402	13,739 707		Copper Tin	7440-50-8 7440-31-5	97.93 0.17	
Silver (Ag) Proprietary Resin	7440-22-4 Trade Secret	Die Attach	0.071	0.330	167		Silver	7440-31-5 7440-22-4	0.17 1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.017	0.054	27	<u> </u>	Silver	7440-22-4 Total	1.91	J
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200	1.79	(mg) Total	Die Attach	% of Total Weight	0.09
Gold	7440-57-5	Wire Bond	0.040	0.794	400	1.79	Silver (Ag)	7440-22-4	79	0.09
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5.700		Proprietary Resin	Trade Secret	19	
1111	7440-31-3 F	TOTALS:	100.000	1,983.900	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	4 0020 ~	Total Mass		.,000.000	.,000,000	r ropriotary	Curing agont a maraonor	Total	100.00	J
		control of the processes, to present to those to	(KUHS Kecasi	Directive) and	d with EU	12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	, ,	(KOHS Kecasi	Directive) and	d With EU	12.30	Total (mg) Doped Silicon	7440-21-3	100	0.62
is semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of reliding compounds used by Microchip meet the UL94 V0 for the compounds used by Microchip meet the UL94 V0 for the control of the compounds used by Microchip meet the UL94 V0 for the control of the control o	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch	nip the		Doped Silicon	7440-21-3 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0 fp://ul.com/global/eng/pages/offerings/industries/chemics	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor devic te is no credible reason to believe that the unavoidab egulatory scheme world-wide. Idastics. You can access the UL iQTM family of databa	e and, to the b le impurity cor	est of Microch ncentration of a test report a	nip the t	0.79		7440-21-3	100	0.04
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of relding compounds used by Microchip meet the UL94 V0 for	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor devic te is no credible reason to believe that the unavoidab egulatory scheme world-wide. Idastics. You can access the UL iQTM family of databa	e and, to the b le impurity cor	est of Microch ncentration of a test report a	nip the t		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of residing compounds used by Microchip meet the UL94 V0 fp://ul.com/global/eng/pages/offerings/industries/chemice protective "tubes" in which the specific product is ship	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/ ped are made from polyvi n in this form concerning ct to the best of its knowle rm because it has been co rom disclosure as trade s mates of the average weig	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. Ilastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safecrets and some information may not have been protent of these parts and the average weight of anticipate	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subcc d significant to	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by portract assem oxic metals cc	t t the outer ductor ated cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of reliding compounds used by Microchip meet the UL94 V0 fp://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is ship x and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information vices in their original packing materials is true and correarantee the completeness and accuracy of data in this for iterial suppliers. Supplier information is often protected waterial suppliers. Information is provided only as esti	via internal design contro memical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/ ped are made from polyvi n in this form concerning ct to the best of its knowle rm because it has been co rom disclosure as trade s mates of the average weig tals, and non-metal materi varranty, express or implie rporated and its subsidiar	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide. Ilastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Microphile based on the ranges provided in Material Safecrets and some information may not have been proth of these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this de	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subcc d significant to finished parts claration. The	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cos.	t the outer ductor ated cannot raw blers and mponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cichnology Incorporated's knowledge and belief as of the cemical substance, if any, is not below the threshold of reliding compounds used by Microchip meet the UL94 V0 fp://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informatic vices in their original packing materials is true and correarantee the completeness and accuracy of data in this forterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as estiese estimates do not include trace levels of dopants, me crochip Technology Incorporated does not provide any vaduct warranties provided by Microchip Technology Incorporated by M	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/ ped are made from polyvi n in this form concerning ct to the best of its knowle rm because it has been co com disclosure as trade s mates of the average weig als, and non-metal materi varranty, express or implie rporated and its subsidiar nd invoices. changes to Material Conte te users' reliance on the ite	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. Ilastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safecrets and some information may not have been provide these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the dd, with respect to the information provided in this delies are contained in Microchip's standard terms and the Declarations and shall not be liable for any damagent.	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol ety Data Sheets vided by subcc d significant to finished parts claration. The conditions of s es, direct or in-	est of Microch neentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	t the outer adductor raw blers and omponents.	0.79	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.04
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clambiogy Incorporated's knowledge and belief as of the inical substance, if any, is not below the threshold of reding compounds used by Microchip meet the UL94 V0 for illucom/globalleng/pages/offerings/industries/chemic- protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information ices in their original packing materials is true and correct rantee the completeness and accuracy of data in this for circle suppliers. Supplier information is often protected material suppliers. Information is provided only as estisse estimates do not include trace levels of dopants, me original provided by Microchip Technology Incorporated by Microchip Technology Incorporated does not provide any valuct warranties provided by Microchip Technology Incorporated corporates as a sesuit of the corporate of the parties as a result of the provise, suffered by users or third parties as a result of the corporate of the corporate in the corporation of the corporate in the corporation of the corp	via internal design contro nemical substance is NOT late of this document, the gulatory concern for any r ammability standard for p als/plastics/ ped are made from polyvi n in this form concerning ct to the best of its knowle rm because it has been co com disclosure as trade s mates of the average weig als, and non-metal materi varranty, express or implie rporated and its subsidiar nd invoices. changes to Material Conte te users' reliance on the ite	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. Ilastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safecrets and some information may not have been provide these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the dd, with respect to the information provided in this delies are contained in Microchip's standard terms and the Declarations and shall not be liable for any damagent.	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol ety Data Sheets vided by subcc d significant to finished parts claration. The conditions of s es, direct or in-	est of Microch neentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	t the outer adductor raw blers and omponents.	0.79	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.04

AT 5 TO-220 7:18 PM : 8/8/2012

MICROCHIP				nation Base A	•		•	ogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor De	vice Type: PT 32 (Lead) TQFP	7x7x1mm (T5)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	269.96	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	229.469	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	23.487	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	16.198	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.810	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.229	34.603	102,286			Total	100.00	
Tin	7440-31-5	Lead Frame	0.026	0.089	263	35.52	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.677	2,000		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.019	0.064	189		Tin	7440-31-5	0.25	
Chromium Silver (Aa)	7440-47-3 7440-22-4	Lead Frame Die Attach	0.026 0.623	0.089 2.106	263 6.225		Silver Zinc	7440-22-4 7440-66-6	1.91 0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.023	0.228	675		Chromium	7440-66-6	0.18	
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600		Cilionium	Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75.000	2.54	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.677	2.000	2.34	Silver (Ag)	7440-22-4	83	0.73
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.229	12,500		ANHYDRIDE	Trade Secret	9	
•••		TOTALS:	100.000	338.300	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.3383 a Tot	al Mass						Total	100.00	
nis semiconductor device and its homogenous mat		95/EC (ROHS DIRECTIVE). EU DIRECTIVE 2011/65/EU	(RoHS Recast	Directive) and	with EU					
his semiconductor device and its homogenous mat irective 2002/53/EC (End-of-Life Vehicles (ELV) Direc- iompliance with the above EU Directives has been valued a chemical substance is absent from the list above	ctive). erified via internal design controls, su	upplier declarations, and /or analytical test data.	•	·		25.37	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.5
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been v	ctive). erified via internal design controls, su , the chemical substance is NOT an ir of the date of this document, there is it d of regulatory concern for any regula 4 V0 flammability standard for plasti	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device In o credible reason to believe that the unavoidable It is a contact the unavoidable tory scheme world-wide.	e and, to the bo	est of Microch	ip the	0.68		7440-21-3	100	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been volume and the state of the	ctive). erified via internal design controls, su, the chemical substance is NOT an in of the date of this document, there is it d of regulatory concern for any regula 4 V0 flammability standard for plastic hemicals/plastics/ is shipped are made from polyvinyl c	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. CS. You can access the UL iQTM family of database.	e and, to the be le impurity cor ses to obtain a	est of Microch ncentration of a test report a	ip the		Doped Silicon	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been volume a chemical substance is absent from the list above echnology incorporated's knowledge and belief as themical substance, if any, is not below the threshol loiding compounds used by Microchip meet the ULt ttp://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product ox and certain "reels" may be made from PVC plast licrochip Technology incorporated believes the infoevices in their original packing materials is true and uarantee the completeness and accuracy of data in naterial suppliers. Supplier information is often proton was material suppliers. Information is provided only hese estimates do not include trace levels of dopan licrochip Technology Incorporated does not provide licrochip Technology Incorporated does not provide licrochip Technology Incorporated does not provide	ctive). erified via internal design controls, sue, the chemical substance is NOT an information of the date of this document, there is in dofregulatory concern for any regular of via the management of the date of this document, there is in dofregulatory concern for any regular of via the management of the management of the management of the management of the the the the this horn because it has been compile ected from disclosure as trade secret as estimates of the average weight of ts, metals, and non-metal materials of the average weight of ts, metals, and non-metal materials of the average weight of ts, metals, and non-metal materials of the average weight of ts, metals, and non-metal materials, or any warranty, express or implied, with	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. cs. You can access the UL iQTM family of database. Inhoride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safe is and some information may not have been prov these parts and the average weight of anticipated ontained within silicon devices (silicon IC) in the lith respect to the information provided in this decit	e and, to the bile impurity coruses to obtain a to hold the pa ogy Incorporat ochip Technolity Data Sheets vided by subcod significant to finished parts claration. The	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora is provided by ontract assem oxic metals co	ip the the outer ductor ted cannot raw blers and mponents.	0.68	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total	100 100.00 % of Total Weight 100 100.00	0.2
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directompliance with the above EU Directives has been volume a chemical substance is absent from the list above echnology Incorporated's knowledge and belief as themical substance, if any, is not below the threshol tolding compounds used by Microchip meet the ULS ttp://ul.com/global/eng/pages/offerings/industries/c he protective "tubes" in which the specific product ox and certain "reels" may be made from PVC plast dicrochip Technology Incorporated believes the information in their original packing materials is true and uarantee the completeness and accuracy of data in a terial suppliers. Supplier information is often protaw material suppliers. Information is provided only hese estimates do not include trace levels of dopan	erified via internal design controls, so the chemical substance is NOT an information of the date of this document, there is a dof regulatory concern for any regulated of regulatory concern for any regulated of regulatory concern for any regulated of the substantial of the subst	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. In the semiconductor device cs. You can access the UL iQTM family of database schloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safe is and some information may not have been prov these parts and the average weight of anticipates ontained within silicon devices (silicon IC) in the fifth respect to the information provided in this dec tre contained in Microchip's standard terms and co- colarations and shall not be liable for any damage	e and, to the bile impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol- ety Data Sheets vided by subco d significant to finished parts claration. The conditions of s	est of Microch ncentration of a test report at cking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	the outer ductor ted cannot raw blers and mponents. ited		Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	0.2
irective 2002/53/EC (End-of-Life Vehicles (ELV) Direction pliance with the above EU Directives has been value a chemical substance is absent from the list above echnology incorporated's knowledge and belief as themical substance, if any, is not below the threshol lolding compounds used by Microchip meet the ULt ttp://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product ox and certain "reels" may be made from PVC plast dicrochip Technology Incorporated believes the infoevices in their original packing materials is true and uarantee the completeness and accuracy of data in naterial suppliers. Supplier information is often protective material suppliers. Information is provided only hese estimates do not include trace levels of dopan licrochip Technology Incorporated does not provider oduct warranties provided by Microchip Technolog in Microchip's quotations, sales order acknowledgen licrochip disclaims any duty to notify users of upda therwise, suffered by users or third parties as a resi	erified via internal design controls, so the chemical substance is NOT an information of the date of this document, there is a dof regulatory concern for any regulated of regulatory concern for any regulated of regulatory concern for any regulated of the substantial of the subst	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide. In the semiconductor device cs. You can access the UL iQTM family of database schloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safe is and some information may not have been prov these parts and the average weight of anticipates ontained within silicon devices (silicon IC) in the fifth respect to the information provided in this dec tre contained in Microchip's standard terms and co- colarations and shall not be liable for any damage	e and, to the bile impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol- ety Data Sheets vided by subco d significant to finished parts claration. The conditions of s	est of Microch ncentration of a test report at cking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals co s. exclusive, lim ale. These are	the outer ductor ted cannot raw blers and mponents. ited	0.68	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

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Basic Substance Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide)										Labeling e3
Silica, vitreous	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	218.09	(mg) Total	Mold Compound	% ot Total Weight	79.8
	60676-86-0	Mold Compound	69.354	189,545	693,542		Silica, vitreous	60676-86-0	86.91	1
	Trade Secret	Mold Compound	6.121	16.728	61.207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	11.145	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.676	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10,000	27.331	100.003		Gairboir Black	Total	100.00	<u>.</u>
Nickel	7440-02-0	Lead Frame	0.267	0.729	2.667	28.70	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.479	1.752	20.70	Copper	7440-50-8	95.24	10.5
Silicon	7440-22-4	Lead Frame	0.047	0.129	473		Nickel	7440-30-6	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.029	105		Silver	7440-02-0	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6.000		Silicon	7440-22-4	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500		Magnesium	7439-95-4	0.45	
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75.000		Wagnesium	Total	100.00	<u>ll</u>
			0.200	0.547						
Gold	7440-57-5	Wire Bond			2,000	2.05	(mg) Total	Die Attach	% of Total Weight	0.75
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500		Silver (Ag)	7440-22-4	80	
		TOTALS:	100.000	273.300	1,000,000	F	Acrylate Urethane Oligomer	General	20	<u>l</u>
	0.2733	g Total Mass						Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via interi chemical substance is absent from the list above, the chemical s	•	, ,	and, to the be	est of Microch	ip	20.50	Total (mg) Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	
hnology Incorporated's knowledge and belief as of the date of th mical substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammabli :://ul.com/qlobal/eng/paqes/offerings/industries/chemicals/plasti	y concern for an oility standard fo	y regulatory scheme world-wide.			L	0.55	(mg) Total	Wire Bond	% of Total Weight	0.2
e protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
crochip Technology Incorporated believes the information in this vices in their original packing materials is true and correct to the	best of its know	wledge and belief, as of the date listed in this form. Micro	chip Technol	ogy Incorpora	ted cannot			Total	100.00	1
uarantee the completeness and accuracy of data in this form becat aterial suppliers. Supplier information is often protected from disc w material suppliers. Information is provided only as estimates of eese estimates do not include trace levels of dopants, metals, and	sclosure as trade of the average we	e secrets and some information may not have been proveight of these parts and the average weight of anticipated	ided by subco I significant to	ntract assemi	blers and					
icrochip Technology Incorporated does not provide any warranty,						3.42	(mg) Total	Plating on external leads (pins) - Matte Tin	% of Total Weight	1,25
roduct warranties provided by Microchip Technology Incorporated n Microchip's quotations, sales order acknowledgement, and invoic		and the state of t				3.42	(ing) rotal	/ annealed at 150°C for 1	70 Of Total Weight	20

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100.000

273.300

MICROCHIP				ation Base A oper Alloy (C	,			ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: PT 64 (Lead) TQFP	10x10x1mm (V2)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	228.79	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	198.838	693.542		Silica, vitreous	60676-86-0	86.91	T .
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	17.548	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	11.691	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.000	28.671	100.003			Total	100.00	<u> </u>
Nickel	7440-02-0	Lead Frame	0.267	0.765	2,667	30.10	(mg) Total	Lead Frame	% of Total Weight	
11000	7 7 7 7 7 7	20dd Ffamo	0.201	0.700	2,007	30.10	(mg) rotal	Lead I fame	70 Of Total Weight	10.0
Silver	7440-22-4	Lead Frame	0.175	0.502	1,752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.135	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.030	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6,000		Silicon	7440-21-3	0.45	1
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.430	1,500		Magnesium	7439-95-4	0.10	1
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000			Total	100.00	=))
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000	2.15	(mg) Total	Die Attach	% of Total Weight	0.75
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12.500		Silver (Ag)	7440-22-4	80	1
	1110 01 0 1 maning c	TOTALS:	100.000	286.700	1.000.000	А	crylate Urethane Oligomer	General	20	1
	0.2867 g Tot				.,,	•		Total	100.00	<u>4</u>
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemical substance is absent from the list above.			e and, to the be	est of Microch	ip	21.50	Total (mg) Doped Silicon	7440-21-3 Total	% of Total Weight	
Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/qlobal/eng/pages/offerings/industries/chemicals/pl	of this document, there is a cory concern for any regula nability standard for plastic	no credible reason to believe that the unavoidable atory scheme world-wide.	e impurity con	centration of	the	0.57	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.		hloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	the best of its knowledge a ecause it has been compil- disclosure as trade secret is of the average weight of	and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safe s and some information may not have been prov these parts and the average weight of anticipated	ochip Technolo ty Data Sheets ided by subco d significant to	egy Incorpora provided by ntract assemi xic metals co	ited cannot raw blers and			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	ated and its subsidiaries a					3.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or changotherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro	ers' reliance on the inform						Tin	7440-31-5	100.00	

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286.700

Total

100.00

100.000

AICROCHIP				nation Base A pper Alloy (C			•	nogeneous Materials: (e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devi	ce Type: PT 64 (Lead)	TQFP 14x14x1mm (V3 / VH)								e3
		"Contained In"	% Total			289.33	(mg) Total	Mold Compound	% ot Total Weight	53.58
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	209.33				
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.543	245.932	455,430		Silica, vitreous (or fused)	,	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.661	25.172	46,615		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.215	17.360	32,148		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.161	0.868	1,607		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	32.381	174.856	323,807		,	Total	100.00	=
Tin	7440-31-5	Lead Frame	0.083	0.449	831	179.50	(mg) Total	Lead Frame	% of Total Weight	33.24
Silver	7440-22-4	Lead Frame	0.633	3.419	6,332		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.060	0.323	598		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.083	0.449	831		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.129	6.096	11,288		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.122	0.661	1.224		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.109	0.588	1.088			Total	100.00	<u> </u>
Silicon	7440-21-3	Chip (Die)	10.540	56.916	105,400	7.34	(mg) Total	Die Attach	% of Total Weight	1.36
Gold	7440-57-5	Wire Bond	0.340	1.836	3,400	7.04	Silver (Ag)	7440-22-4	83	1.50
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	5.076	9,400		ANHYDRIDE	Trade Secret	9	
	7440-31-3	TOTALS:	100.000	540.000	1.000.000		EPOXY RESIN	Trade Secret	8	
		TOTAES.	100.000	040.000	1,000,000		EI OXI IXEOIN	Trade Occide	Ü	1
		a Total Mass						Total	100.00	
s comisondustor doving and its homogenous mater		g Total Mass	(PoUS Posset	Directive) and	lwith Ell			Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directi	ials comply with EU Directive).	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	56.92	Total (mg)	Chip (Die)	% of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directing in pliance with the above EU Directives has been veri	ials comply with EU Directive). ve). fied via internal design con	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data.		,		56.92	Total (mg) Doped Silicon		% of Total Weight	10.54
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directival pliance with the above EU Directives has been verichemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of indical substance, if any, is not below the threshold of the control of the contro	ials comply with EU Directive). fied via internal design con ne chemical substance is Nothe date of this document, to f regulatory concern for an	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch	ip the	56.92	1	Chip (Die) 7440-21-3	% of Total Weight	10.54
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directinpliance with the above EU Directives has been verichemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94	ials comply with EU Directive). fied via internal design con the chemical substance is No the date of this document, to f regulatory concern for an VO flammability standard fo	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable	e and, to the b le impurity coi	est of Microch	ip the	1.84	1	Chip (Die) 7440-21-3	% of Total Weight	10.54
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directi- inpliance with the above EU Directives has been veri- chemical substance is absent from the list above, the chology incorporated's knowledge and belief as of the companies	ials comply with EU Directive). fied via internal design con ne chemical substance is Ni- he date of this document, to fregulatory concern for an VO flammability standard for micals/plastics/ shipped are made from pol	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	e and, to the b le impurity con	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00 % of Total Weight	0.34
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directing pliance with the above EU Directives has been verichemical substance is absent from the list above, the hology Incorporated's knowledge and belief as of imical substance, if any, is not below the threshold of the hology Incorporated's knowledge and belief as of imical substance, if any, is not below the threshold of the hology Incorporation with the UL94 or./I/U.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informatices in their original packing materials is true and cirantee the completeness and accuracy of data in this terial suppliers. Supplier information is often protect material suppliers. Information is provided only as	ials comply with EU Directive). fied via internal design con the chemical substance is Noted the date of this document, to for regulatory concern for an two flammability standard for micals/plastics/ shipped are made from pol the concernity of the the set of its known to the best of its known to form because it has been ted from disclosure as trade estimates of the average we	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databa	e and, to the b le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subco d significant to	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals cc	ip the the outer ductor ted cannot raw blers and		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.34
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directing pliance with the above EU Directives has been verichemical substance is absent from the list above, the hology Incorporated's knowledge and belief as of imical substance, if any, is not below the threshold of the protective substance, if any, is not below the threshold of the protective "tubes" in which the specific product is and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and cirantee the completeness and accuracy of data in this terial suppliers. Supplier information is often protect material suppliers. Information is provided only as see estimates do not include trace levels of dopants, prochip Technology Incorporated does not provide a	ials comply with EU Directive). fied via internal design con the chemical substance is Note date of this document, to f regulatory concern for an V0 flammability standard for micals/plastics/ shipped are made from pol thation in this form concernity orrect to the best of its known in the concernity orrect to the best of its known in the concernity or form disclosure as tradestimates of the average we metals, and non-metal mat ny warranty, express or impinocrporated and its subsidiation.	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaty or the companion of the c	e and, to the ble impurity consists to obtain a to hold the party of the party of the party of the party bata Sheets wided by subcod significant to finished party claration. The	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpore s provided by ontract assem oxic metals cos.	ip the the outer ductor ted cannot raw blers and mponents.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.34
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directing pliance with the above EU Directives has been verichemical substance is absent from the list above, the hology Incorporated's knowledge and belief as of in mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 c://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informacies in their original packing materials is true and crantee the completeness and accuracy of data in the rial suppliers. Supplier information is often protectinate in the provided only as se estimates do not include trace levels of dopants, trochip Technology Incorporated does not provide a duct warranties provided by Microchip Technology Incorporated does not provide a duct warranties provided by Microchip Technology Incorporated does not provide a duct warranties provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a duct warranties provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated does not provide a control of the provided by Microchip Technology Incorporated the provided by M	ials comply with EU Directive). fied via internal design con ne chemical substance is Ni the date of this document, it of regulatory concern for an VO flammability standard for micals/plastics/ shipped are made from pol aution in this form concerni orrect to the best of its kno is form because it has been ted from disclosure as tradi estimates of the average w metals, and non-metal mat ny warranty, express or imp incorporated and its subsid nt, and invoices.	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databaty or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can access the UL iQTM family or plastics. You can acce	e and, to the b le impurity col uses to obtain a to hold the pa ogy Incorporal ochip Technol sty Data Sheets vided by subcc d significant to finished parts claration. The conditions of s es, direct or in-	est of Microch ncentration of a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim sale. These are	ip the the outer ductor tted cannot raw blers and mponents. ited provided	1.84	Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.34

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MICROCHIP Semiconductor Device Type	· DT 90 / » T	OFP (2.12.4 CVP)		nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	. PI OU (Lead) I	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	292.63	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	254.322	693.542		Silica, vitreous	60676-86-0	86.91	1
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	22,444	61.207		Epoxy Resin	Trade Secret	7.67	1
Phenolic Resin (No Br / CL SbO3. No diantimony trioxide)	Trade Secret	Mold Compound	4.078	14.953	40,778		Phenolic Resin	Trade Secret	5.11	1
Carbon Black	1333-86-4	Mold Compound	0.247	0.907	2,474		Carbon Black	1333-86-4	0.31	i
Copper	7440-50-8	Lead Frame	10.000	36.671	100.003			Total	100.00	4
Nickel	7440-02-0	Lead Frame	0.267	0.978	2,667	38.50	(mg) Total	Lead Frame	% of Total Weight	
THORO	7 1 10 02 0	20dd Franto	0.201	0.070	2,007	30.30	(ilig) Total	Leau i iaille	78 OF TOTAL WEIGHT	10.5
Silver	7440-22-4	Lead Frame	0.175	0.643	1.752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.173	473		Nickel	7440-02-0	2.54	i
Magnesium	7439-95-4	Lead Frame	0.011	0.039	105		Silver	7440-22-4	1.67	i
Silver (Ag)	7440-22-4	Die Attach	0.600	2.200	6.000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.550	1,500		Magnesium	7439-95-4	0.45	
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75.000		Wagnesiani	Total	100.00	1
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000	2.75	() T-4-1	Die Attach	% of Total Weight	
			1.250	4.584	12.500	2.75	(mg) Total			0.75
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	366.700			Silver (Ag)	7440-22-4	80	l
		TOTALS:	100.000	366.700	1,000,000	A	crylate Urethane Oligomer	General	20	<u> </u>
	0.3667 g	Total Mass						Total	100.00	
s semiconductor device and its homogenous materials comp	ly with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	Juniale Ell					
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			(Directive, and	i with EU	27.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
, , , , ,	ternal design contro	, ,	(Home House	Directive, and	i with EO	27.50	Total (mg) Doped Silicon	7440-21-3	100	7.5
mpliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date of	al substance is NOT f this document, the	ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab	e and, to the b	est of Microch	ip	27.50	, ,			7.5
mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic shnology incorporated's knowledge and belief as of the date cemical substance, if any, is not below the threshold of regulated in the compounds used by Microchip meet the UL94 V0 flamm	al substance is NOT f this document, the ory concern for any ability standard for	ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide.	e and, to the be	est of Microch	ip the	0.73	, ,	7440-21-3	100	
mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic chinology Incorporated's knowledge and belief as of the date cemical substance, if any, is not below the threshold of regulat liding compounds used by Microchip meet the UL94 V0 flammp://ul.com/global/eng/pages/offerings/industries/chemicals/pleprotective "tubes" in which the specific product is shipped as	al substance is NOT f this document, the ory concern for any ability standard for astics/	ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidabingulatory scheme world-wide. plastics. You can access the UL iQTM family of database.	e and, to the be le impurity cor	est of Microch ncentration of a test report a	ip the		Doped Silicon	7440-21-3 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic ichnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulat olding compounds used by Microchip meet the UL94 V0 flamm sp://ul.com/global/eng/pages/offerings/industries/chemicals/pl are protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.	al substance is NOT f this document, the ory concern for any ability standard for astics/ are made from polyw	ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databating the control of the con	e and, to the belle impurity coruses to obtain a	est of Microch ncentration of a test report a cking slip on	ip the : the outer		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date cemical substance, if any, is not below the threshold of regulational public compounds used by Microchip meet the UL94 V0 flammer. It is the public com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped at	al substance is NOT If this document, the ory concern for any ability standard for astics/ are made from polyv this form concerning the best of its knowl cause it has been c. is of the average welg to the concerning the concerning the best of its knowl cause it has been c.	ols, supplier declarations, and /or analytical test data. Tan intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidability of database and the semiconductor device. Plastics. You can access the UL iQTM family of database and the light of these parts and the average weight of anticipate of the light of these parts and the average weight of anticipate is semiconductor.	e and, to the bile impurity coruses to obtain a to hold the part ochip Technolety Data Sheets vided by subcod significant to	est of Microch ncentration of a test report at cking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	ip the the outer ductor ted cannot raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic ichnology Incorporated's knowledge and belief as of the date cemical substance, if any, is not below the threshold of regulational properties of the compounds used by Microchip meet the UL94 V0 flammed properties of the compounds used by Microchip meet the UL94 V0 flammed properties of the compounds used by Microchip meet the UL94 V0 flammed properties of the compounds	al substance is NOT If this document, the ory concern for any ability standard for astics/ are made from polyv this form concerning the best of its knowl cause it has been c. is of the average weig and non-metal mater ty, express or impli ted and its subsidia	ols, supplier declarations, and /or analytical test data. Tan intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databatingly chloride (PVC) plastic. "Window envelopes" used in substances restricted by RoHS in Microchip Technoledge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Secrets and some information may not have been project of these parts and the average weight of anticipate ials contained within silicon devices (silicon IC) in the ed, with respect to the information provided in this deed, with respect to the information provided in this deed, with respect to the information provided in this deed.	e and, to the bile impurity coruses to obtain a long line part ochip Technolety Data Sheets wided by subcod significant to finished parts claration. The	est of Microch a test report and acking slip on ded's semicon ogy Incorpora is provided by motract assem oxic metals considerations.	ip the the outer ductor ted cannot raw blers and mponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic is chnology Incorporated's knowledge and belief as of the date cemical substance, if any, is not below the threshold of regulate biding compounds used by Microchip meet the UL94 V0 flamm to compounds used by Microchip meet the UL94 V0 flamm to compound to the protective "tubes" in which the specific product is shipped at an and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to carantee the completeness and accuracy of data in this form be aterial suppliers. Supplier information is often protected from we material suppliers. Information is provided only as estimate uses estimates do not include trace levels of dopants, metals, a crochip Technology Incorporated does not provide any warrandoduct warranties provided by Microchip Technology Incorporated dought in the component of the component of the control of	al substance is NOT f this document, the ory concern for any ability standard for astics/ are made from polyv his form concerning the best of its knowl cause it has been or disclosure as trade is of the average weig und non-metal mater ty, express or impli ted and its subsidia roices. Jes to Material Conte ers' reliance on the i	ols, supplier declarations, and /or analytical test data. Tan intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databating the control of the co	e and, to the belle impurity cor uses to obtain a lito hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subco d significant to efinished parts icclaration. The conditions of s	est of Microch a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co acceptable of the exclusive, lim ale. These are	the outer ductor ted cannot raw blers and mponents. ited provided quential or	0.73	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100 100.00	. 0.2
mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic shnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulation of the compounds used by Microchip meet the UL94 V0 flammo://ul.com/global/eng/pages/offerings/industries/chemicals/pleprotective "tubes" in which the specific product is shipped at and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information in thices in their original packing materials is true and correct to trantee the completeness and accuracy of data in this form but retrial suppliers. Supplier information is often protected from material suppliers. Information is provided only as estimates see estimates do not include trace levels of dopants, metals, a prochip Technology Incorporated does not provide any warrar duct warranties provided by Microchip Technology Incorporation in the complete of	al substance is NOT f this document, the ory concern for any ability standard for astics/ are made from polyv his form concerning the best of its knowl cause it has been or disclosure as trade is of the average weig und non-metal mater ty, express or impli ted and its subsidia roices. Jes to Material Conte ers' reliance on the i	ols, supplier declarations, and /or analytical test data. Tan intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide. plastics. You can access the UL iQTM family of databating the control of the co	e and, to the belle impurity cor uses to obtain a lito hold the pa ogy Incorporat ochip Technol sty Data Sheets vided by subco d significant to efinished parts icclaration. The conditions of s	est of Microch a test report at acking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals co acceptable of the exclusive, lim ale. These are	the outer ductor ted cannot raw blers and mponents. ited provided quential or	0.73	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

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MICROCHIP Semiconductor Device	e Type: DE 90 a	TOED 4444 WOVE		ation Base A	. ,			ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	e Type. Pr ou (Lead)			1						
Paris Outrass	040 N	"Contained In" Sub-Component	% Total Weight			306.01	(mg) Total	Mold Compound	% ot Total Weight	t 57.52
Basic Substance	CAS Number	•		mg/part	ppm		,		_	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	48.892 5.004	260.105	488,920		Silica, vitreous (or fused)		85.00 8.70	4
Epoxy Resin Phenolic Resin	Trade Secret	Mold Compound Mold Compound	3.451	26.623	50,042		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	6.00	
Carbon Black	Trade Secret 1333-86-4		0.173	18.360 0.918	34,512			1333-86-4		4
		Mold Compound			1,726		Carbon Black		0.30	<u>J</u>
Copper	7440-50-8	Lead Frame	31.426	167.187	314,261			Total		
Tin	7440-31-5	Lead Frame	0.081	0.429	807	171.62	(mg) Total	Lead Frame	% of Total Weight	t 32.26
Silver	7440-22-4	Lead Frame	0.615	3.269	6,146		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.058	0.309	581		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.081	0.429	807		Silver	7440-22-4	1.91	1
Silver (Ag)	7440-22-4	Die Attach	0.830	4.416	8,300		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900		Chromium	7440-47-3	0.25	<u>J</u>
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.650	40.698	76,500	5.32	(mg) Total	Die Attach	% of Total Weight	11
Gold	7440-57-5	Wire Bond	0.370	1.968	3,700		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12,000		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	532.000	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.5320	g Total Mass						Total	100.00)
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifing a chemical substance is absent from the list above, the Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of	ied via internal design con e chemical substance is No he date of this document, t	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable					Doped Silicon	7440-21-3 Total	100	
Molding compounds used by Microchip meet the UL94 \http://ul.com/global/eng/pages/offerings/industries/chen		r plastics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	1.97	(mg) Total	Wire Bond	% of Total Weight	t 0.37
The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic.	shipped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the inform devices in their original packing materials is true and configurate the completeness and accuracy of data in this material suppliers. Supplier information is often protect raw material suppliers. Information is provided only as of These estimates do not include trace levels of dopants,	orrect to the best of its known of the because it has been a grant disclosure as tradestimates of the average we	wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been proveight of anticipate	ochip Technolo ty Data Sheets rided by subco d significant to	ogy Incorpora provided by ntract assemi xic metals co	ated cannot raw blers and			Total	100.00	7
Microchip Technology Incorporated does not provide an product warranties provided by Microchip Technology Ir in Microchip's quotations, sales order acknowledgemen	ncorporated and its subsid					6.38	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	t 1.2
Microchip disclaims any duty to notify users of updates otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semicondu	of the users' reliance on th						Tin	7440-31-5	100.00	
								Total	100.00	=

PF 80 TQFP 7:18 PM : 8/8/2012

100.000

532.000

AICROCHIP				nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: PF 100 (Lead	i) TQFP 12x12x1mm (V7)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	312.02	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	271.175	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	23.932	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	15.944	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.967	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.000	39.101	100.003			Total	100.00	ı
Nickel	7440-02-0	Lead Frame	0.267	1.043	2.667	41.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.685	1.752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.185	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	2.346	6.000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.587	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75.000			Total	100.00	J
Gold	7440-57-5	Wire Bond	0.200	0.782	2,000	2.93	(mg) Total	Die Attach	% of Total Weight	0.75
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12.500	2.00	Silver (Ag)		80	00
1111	7 7 7 7 7 7									
			100.000	391.000	1.000.000		Acrylate Urethane Oligomer	General	20	
semiconductor device and its homogenous materials com		TOTALS: g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	100.000 (RoHS Recast	391.000 Directive) and	1,000,000 d with EU		Acrylate Urethane Oligomer	General Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU			,,	29.33	Total (mg) Doped Silicon			7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date	ply with EU Directive internal design continued is No of this document, the plant is not the plant in the plant is not the plant in the plant is not the plant in	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab	(RoHS Recast	Directive) and	d with EU		Total (mg)	Total Chip (Die)	100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regula ing compounds used by Microchip meet the UL94 V0 flami	ply with EU Directive internal design confical substance is NO of this document, the tory concern for an mability standard fo	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	(RoHS Recast e and, to the b le impurity con	Directive) and set of Microchacentration of	d with EU		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regula ling compounds used by Microchip meet the UL94 V0 flami //ul.com/global/eng/pages/offerings/industries/chemicals/p	ply with EU Directive internal design continuation is No of this document, the tory concern for an mability standard for lastics/	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of database.	e and, to the ble impurity consess to obtain a	Directive) and est of Microchacentration of a test report a	d with EU	29.33	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem nology incorporated's knowledge and belief as of the date lical substance, if any, is not below the threshold of regula ing compounds used by Microchip meet the UL94 V0 flami //ul.com/global/eng/pages/offerings/industries/chemicals/p protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	ply with EU Directive internal design con- ical substance is No of this document, the tory concern for an emability standard for a lastics/	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaty or the semiconductor device in	e and, to the ble impurity consess to obtain a	Directive) and est of Microchacentration of a test report a cking slip on	d with EU	29.33	Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem nology incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regula ing compounds used by Microchip meet the UL94 V0 flami/ful.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Dehip Technology Incorporated does not provide any warra uct warranties provided by Microchip Technology Incorporated does not provide any warrauct warranties provided by Microchip Technology Incorporated uct warranties provided by Microchip Technology Incorporated to the provide any warrauct warranties provided by Microchip Technology Incorporated to the provide any warrauct warranties provided by Microchip Technology Incorporated to the provide any warrauct warranties provided by Microchip Technology Incorporated to the provide any warrauct warranties provided by Microchip Technology Incorporated to the provide any warrauct warranties provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorpora	ply with EU Directive internal design continuation of this document, the tory concern for an mability standard for lastics/ are made from polythis form concernition of the tory concernities of the tory concernition of the tory concernities of the tory concernities of the tory concernities of the tory concernities of the	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databaty viringly chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technololied, with respect to the information provided in this de	e and, to the b le impurity con uses to obtain a I to hold the pa ogy Incorporar Iclaration. The	Directive) and est of Microchacentration of a test report a cking slip on ted's semicon exclusive, lim	d with EU hip the t the outer	29.33	Total (mg) Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100 100.00 % of Total Weight	
s semiconductor device and its homogenous materials comective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamic://ul.com/global/eng/pages/offerings/industries/chemicals/paperotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranduct warranties provided by Wicrochip Technology Incorporated does not provide any warranduct warranties provided by Wicrochip Technology Incorporated does not provide any warranduct warranties provided by Wicrochip Technology Incorporated does not provide any warranduct warranties provided by Wicrochip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated does not provide any warranducture and the provided by Microchip Technology Incorporated does not provide any warranducture and the provided by Microchip Technology Incorporated does not provide any warranducture and the provided by Microchip Technology Incorporated does not provide any warranducture and the provided by Microchip Technology Incorporated does not provided b	ply with EU Directive internal design continuation of this document, the tory concern for an emability standard for a made from polythis form concernity, express or imprated and its subsidiation of the tory concernity of the tory concernity, express or imprated and its subsidiation of the tory concess.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaty virily chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technol blied, with respect to the information provided in this defaires are contained in Microchip's standard terms and other the Declarations and shall not be liable for any damage	e and, to the ble impurity consess to obtain a lito hold the particular ation. The conditions of sees, direct or in	Directive) and est of Microch contration of a test report a cking slip on exclusive, lim ale. These are	d with EU hip the t the outer ductor lited e provided	0.78	Total (mg) Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem inology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regula ling compounds used by Microchip meet the UL94 V0 flami i//ul.com/global/eng/pages/offerings/industries/chemicals/p protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in ochip Technology Incorporated does not provide any warra luct warranties provided by Microchip Technology Incorpor icrochip's quotations, sales order acknowledgement, and i ochip disclaims any duty to notify users of updates or char rwise, suffered by users or third parties as a result of the u	ply with EU Directive internal design continuation of this document, the tory concern for an emability standard for a made from polythis form concernity, express or imprated and its subsidiation of the tory concernity of the tory concernity, express or imprated and its subsidiation of the tory concess.	g Total Mass re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databaty virily chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technol blied, with respect to the information provided in this defaires are contained in Microchip's standard terms and other the Declarations and shall not be liable for any damage	e and, to the ble impurity consess to obtain a lito hold the particular ation. The conditions of sees, direct or in	Directive) and est of Microch contration of a test report a cking slip on exclusive, lim ale. These are	d with EU hip the t the outer ductor lited e provided	0.78	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

PF 100 TQFP 7:19 PM : 8/8/2012

MICROCHIP				nation Base A pper Alloy (C	•		•	ogeneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: PF 100 (Lead	i) TQFP 14x14mm (X5 / EQ)								e3
	`	"Contained In"	% Total			339.65	(mg) Total	Mold Compound	% ot Total Weight	68.34
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	000.00	(g) . o.u.			00.04
Silica, vitreous (or fused)	60676-86-0	Mold Compound	58.089	288.702	580,890		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.946	29.550	59,456		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.100	20.379	41,004		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.205	1.019	2,050		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.156	129.995	261,559			Total	100.00	
Tin	7440-31-5	Lead Frame	0.067	0.334	671	133.44	(mg) Total	Lead Frame	% of Total Weight	26.85
Silver	7440-22-4	Lead Frame	0.511	2.542	5.115		0	7440-50-8	07.40	
			0.511	0.240	483		Copper		97.42	
Zinc	7440-66-6	Lead Frame					Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.067	0.334	671		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.481	2.393	4,814		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.052	0.259	522		Chromium	7440-47-3	0.25	<u>[</u>
EPOXY RESIN	Trade Secret	Die Attach	0.046	0.231	464			Total	100.00	
Silicon	7440-21-3	Chip (Die)	2.710	13.469	27,100	2.88	(mg) Total	Die Attach	% of Total Weight	0.58
Gold	7440-57-5	Wire Bond	0.420	2.087	4,200		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	5.467	11,000		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	497.000	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.4970	a Total Mass						Total	100.00	=
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive. Compliance with the above EU Directives has been verifie If a chemical substance is absent from the list above, the Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of	d via internal design con chemical substance is No date of this document, t	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable				13.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	2.71
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemi		r plastics. You can access the UL iQTM family of database	ses to obtain a	a test report at	t	2.09	(mg) Total	Wire Bond	% of Total Weight	0.42
The protective "tubes" in which the specific product is sh box and certain "reels" may be made from PVC plastic.	ipped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the informat devices in their original packing materials is true and cor guarantee the completeness and accuracy of data in this is material suppliers. Supplier information is of	rect to the best of its know form because it has been If from disclosure as trade	wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov	ochip Technol ity Data Sheets ided by subco d significant to	ogy Incorpora s provided by entract assemi exic metals co	ited cannot raw blers and			Total	100.00	-
raw material suppliers. Information is provided only as es These estimates do not include trace levels of dopants, m			finished parts	s.						
raw material suppliers. Information is provided only as es	etals, and non-metal mat warranty, express or imp corporated and its subsid	erials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dec	claration. The	exclusive, lim		5.47	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1
raw material suppliers. Information is provided only as es These estimates do not include trace levels of dopants, m Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inc	etals, and non-metal mat warranty, express or imp corporated and its subsid and invoices. r changes to Material Cor the users' reliance on th	erials contained within silicon devices (silicon IC) in the slied, with respect to the information provided in this dec arries are contained in Microchip's standard terms and c stent Declarations and shall not be liable for any damage	claration. The conditions of s	exclusive, lim ale. These are direct, conseq	provided Juential or	5.47	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.1

PF 100 TQFP 7:19 PM : 8/8/2012

100.000

497.000

MICROCHIP Semiconductor Devic	ce Type: PH 144 (Lead) TQF	P 16x16x1mm (R9)		nination Base Copper Alloy				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	467.72	(mg) Total	Mold Compound	% ot Total Weight	68.23
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	397.559	579,955		Silica, vitreous (or fused)	60676-86-0	85.0000	
Epoxy Resin	Trade Secret	Mold Compound Mold Compound	5.936	40.691	59.360		Epoxy Resin	Trade Secret	8.7000	
Phenolic Resin	Trade Secret	Mold Compound	4.094	28.063	40,938		Phenolic Resin	Trade Secret	6.0000	
Carbon Black	1333-86-4	Mold Compound	0.205	1,403	2.047		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	26.955	184,775	269,547		Carbon Black	Total	100.00	
Tin	7440-30-5	Lead Frame	0.069	0.474	692	189.68	() T-4-1	Lead Frame	% of Total Weight	27.67
						189.68	(mg) Total			21.01
Silver	7440-22-4	Lead Frame	0.527	3.613	5,271	4	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.050	0.341	498	4	Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.069	0.474	692	4	Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.423	2.902	4,233	1	Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.046	0.315	459	J	Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.041	0.280	408	1		Total	100.00	
Silicon	7440-21-3	Chip (Die)	2.090	14.327	20,900	3.50	(mg) Total	Die Attach	% of Total Weight	0.51
Doped Gold	7440-57-5	Wire Bond	0.280	1.919	2,800		Silver (Ag)	7440-22-4	83.00	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	8.363	12,200	1	ANHYDRIDE	Trade Secret	9.00	
	7 1 10 0 1 0	TOTALS:	100.000	685.500	1.000.000		EPOXY RESIN	Trade Secret	8.00	
	0.0055 -		100.000	000.000	1,000,000		ET GAT REGIN	Total	100.00	
	0.6855 g Tot							Total	100.00	
is semiconductor device and its homogenous materia ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive		53/EC (KOH3 Directive), EO Directive 2011/03/EO	(NOH3 Necas	si Directive) a	iiu wiiii EU	14.33	(mg) Total	Chip (Die)	% of Total Weight	2.09
• • • • • • • • • • • • • • • • • • • •									-	
ompliance with the above EU Directives has been verifi a chemical substance is absent from the list above, the	•	•	e and, to the	best of Micro	chip		Doped Silicon	7440-21-3 Total	100	
a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of th bstance, if any, is not below the threshold of regulator	e chemical substance is NOT an in e date of this document, there is n y concern for any regulatory schel	tentional ingredient in the semiconductor device no credible reason to believe that the unavoidable me world-wide.	e impurity co	oncentration o	of the chemical		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Total	100.00	
. a chemical substance is absent from the list above, the schnology Incorporated's knowledge and belief as of the libstance, if any, is not below the threshold of regulator blding compounds used by Microchip meet the UL94 Vtp://ul.com/global/eng/pages/offerings/industries/chem	e chemical substance is NOT an in e date of this document, there is n y concern for any regulatory schet 0 flammability standard for plastic icals/plastics/	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable me world-wide.	e impurity co	oncentration o	of the chemical	1.92	Doped Silicon (mg) Total			0.28
a chemical substance is absent from the list above, the schnology Incorporated's knowledge and belief as of th abstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V	e chemical substance is NOT an in e date of this document, there is n y concern for any regulatory schet 0 flammability standard for plastic icals/plastics/	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable me world-wide.	e impurity co	oncentration o	of the chemical		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.28
a chemical substance is absent from the list above, the schnology Incorporated's knowledge and belief as of the libstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 Vtp://ul.com/global/eng/pages/offerings/industries/chemer protective "tubes" in which the specific product is si	e chemical substance is NOT an in- e date of this document, there is n y concern for any regulatory sche 0 flammability standard for plastic- icals/plastics/ hipped are made from polyvinyl ch tion in this form concerning subst rrect to the best of its knowledge a form because it has been compile isclosure as trade secrets and son ates of the average weight of thes»	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable we world-wide. s. You can access the UL iQTM family of database the loride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technologiand belief, as of the date listed in this form. Microed based on the ranges provided in Material Safeme information may not have been provided by se parts and the average weight of anticipated sig	e impurity co ses to obtain to hold the p ogy Incorpor ochip Techno ty Data Shee subcontract a inificant toxio	a test report acking slip o ated's semico ology Incorpo ts provided b assemblers ar c metals com	of the chemical at n the outer onductor rated cannot y raw material nd raw		(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.28
a chemical substance is absent from the list above, the schnology Incorporated's knowledge and belief as of the libstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V tp://ul.com/global/eng/pages/offerings/industries/chem en protective "tubes" in which the specific product is si ox and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informativices in their original packing materials is true and contarantee the completeness and accuracy of data in this ippliers. Supplier information is often protected from daterial suppliers. Information is provided only as estim tese estimates do not include trace levels of dopants, recochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporate crochip's quotations, sales order acknowledgement, a	e chemical substance is NOT an initial edate of this document, there is no y concern for any regulatory schell of flammability standard for plastic icals/plastics/ hipped are made from polyvinyl chapter of the standard form because it has been compile isclosure as trade secrets and son ates of the average weight of these metals, and non-metal materials con y warranty, express or implied, with ed and its subsidiaries are contained invoices.	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable me world-wide. Es. You can access the UL iQTM family of database the loride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technological database on the ranges provided in Material Safetine information may not have been provided by see parts and the average weight of anticipated signontained within silicon devices (silicon IC) in the threspect to the information provided in this decided in Microchip's standard terms and condition	e impurity co ses to obtain to hold the p ogy Incorpor- ochip Technet ty Data Shee ty Data Shee subcontract a inificant toxic finished par claration. The s of sale. Th	a test report acking slip o ated's semico logy Incorpo ts provided b assemblers ar metals com ts. e exclusive, li ese are provide	of the chemical at In the outer		(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.28
a chemical substance is absent from the list above, the inchnology Incorporated's knowledge and belief as of the instance, if any, is not below the threshold of regulator polding compounds used by Microchip meet the UL94 V typ://ul.com/global/eng/pages/offerings/industries/cheme protective "tubes" in which the specific product is since and certain "reels" may be made from PVC plastic. corochip Technology Incorporated believes the informativices in their original packing materials is true and contarantee the completeness and accuracy of data in this pipliers. Supplier information is often protected from daterial suppliers. Information is provided only as estimates do not include trace levels of dopants, recrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorporated to t	e chemical substance is NOT an ime date of this document, there is ny concern for any regulatory schell of lammability standard for plastic icals/plastics/ hipped are made from polyvinyl charton in this form concerning substruct to the best of its knowledge a form because it has been compile isclosure as trade secrets and son attes of the average weight of these metals, and non-metal materials cy warranty, express or implied, with the dand its subsidiaries are contained invoices.	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable me world-wide. Is. You can access the UL iQTM family of database the loride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technologist and belief, as of the date listed in this form. Microel based on the ranges provided in Material Safethe in information may not have been provided by see parts and the average weight of anticipated signation of the information provided in this decent that the respect to the information provided in this decent in Microchip's standard terms and condition clarations and shall not be liable for any damage	e impurity co ses to obtain to hold the p ogy Incorpor schip Techno ty Data Shee subcontract a nificant toxic finished par claration. The s of sale. Th	a test report acking slip o ated's semico logy Incorpo ts provided b assemblers ar metals comp ts. e exclusive, li esee are providendirect, conse	of the chemical at n the outer onductor rated cannot y raw material nd raw ponents. mited product ded in	1.92	(mg) Total Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100.00	
chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the ostance, if any, is not below the threshold of regulator Iding compounds used by Microchip meet the UL94 Vp://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is six and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informatives in their original packing materials is true and colarantee the completeness and accuracy of data in this opliers. Supplier information is often protected from dietral suppliers. Information is ortoided only as estimates es estimates do not include trace levels of dopants, recrochip Technology Incorporated does not provide any cranties provided by Microchip Technology Incorporate crochip's quotations, sales order acknowledgement, a crochip disclaims any duty to notify users of updates deterwise, suffered by users or third parties as a result of	e chemical substance is NOT an ime date of this document, there is ny concern for any regulatory schell of lammability standard for plastic icals/plastics/ hipped are made from polyvinyl charton in this form concerning substruct to the best of its knowledge a form because it has been compile isclosure as trade secrets and son attes of the average weight of these metals, and non-metal materials cy warranty, express or implied, with the dand its subsidiaries are contained invoices.	tentional ingredient in the semiconductor device to credible reason to believe that the unavoidable me world-wide. Is. You can access the UL iQTM family of database the loride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technologist and belief, as of the date listed in this form. Microel based on the ranges provided in Material Safethe in information may not have been provided by see parts and the average weight of anticipated signation of the information provided in this decent that the respect to the information provided in this decent in Microchip's standard terms and condition clarations and shall not be liable for any damage	e impurity co ses to obtain to hold the p ogy Incorpor schip Techno ty Data Shee subcontract a nificant toxic finished par claration. The s of sale. Th	a test report acking slip o ated's semico logy Incorpo ts provided b assemblers ar metals comp ts. e exclusive, li esee are providendirect, conse	of the chemical at n the outer onductor rated cannot y raw material nd raw ponents. mited product ded in	1.92	(mg) Total Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100.00 100.00 % of Total Weight	

PH 144 TQFP 7:19 PM : 8/8/2012

ICROCHIP Semiconductor Device Typ	e: ST 08 (Lead)	TSSOP 4.4mm (C5 / CN / A4)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Paris Substance	CAC Number	"Contained In" Sub-Component	% Total Weight			19.49	(mg) Total	Mold Compound	% ot Total Weight	59.06
Basic Substance	CAS Number 60676-86-0	Mold Compound	50,201	mg/part	ppm		Silica, vitreous	60676-86-0	85.00	1
Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.617	16.566 1.194	502,010 36,174		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3. No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound Mold Compound	1.447	0.478	14,470		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.177	0.478	1.772		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	30.020	9.907	300.200		Calbon Black	Total	100.00	Į.
Nickel	7440-02-0		0.801	0.264	8,006					
		Lead Frame				10.40	(mg) Total	Lead Frame	% of Total Weight	31.52
Silver	7440-22-4	Lead Frame	0.526	0.174	5,261		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.142	0.047	1,418		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.032	0.010	315		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.840	0.277	8,400		Silicon	7440-21-3	0.45	
Diester Resin	94-80-4	Die Attach	0.168	0.055	1,680		Magnesium	7439-95-4	0.10	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.056	0.018	560			Total	100.00	•
Epoxy Resin	9003-36-5	Die Attach	0.028	0.009	280	0.37	(mg) Total	Die Attach	% of Total Weight	1.12
Epoxy Resin	13561-08-5	Die Attach	0.028	0.009	280		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	6.300	2.079	63.000		Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	0.180	0.059	1.800	Fun	ctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	0.601	18,200		Epoxy Resin	9003-36-5	3	
1111	7 1 10 0 1 0	TOTALS:	100.000	33.000	1.000.000		Epoxy Resin		3	
	0.0220	a Total Mass	100.000	00.000	1,000,000		Epoxy Resili		9	
	ply with EU Directiv	2	(RoHS Recast	Directive) and	d with EU	2.08	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	6.3
semiconductor device and its homogenous materials com tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via nemical substance is absent from the list above, the chem	internal design conf ical substance is NO	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic	e and, to the b	est of Microch	ıip	2.08	Total (mg) Doped Silcon			6.3
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via emical substance is absent from the list above, the chem ology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ing compounds used by Microchip meet the UL94 Vof Ilam ul.com/global/eng/pages/offerings/industries/chemicals/j rotective "tubes" in which the specific product is shipped	internal design confical substance is NG of this document, the tory concern for an inability standard for lastics/	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation.	e and, to the b le impurity cor uses to obtain a	est of Microch ncentration of a test report a	nip the	2.08		Chip (Die) 7440-21-3	% of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via	internal design confical substance is NG of this document, the tory concern for an inability standard for lastics/	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation.	e and, to the b le impurity cor uses to obtain a	est of Microch ncentration of a test report a	nip the		Doped Silcon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via nemical substance is absent from the list above, the chem rology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam rul.com/global/eng/pages/offerings/industries/chemicals/i rotective "tubes" in which the specific product is shipped	internal design confical substance is NO of this document, the tory concern for an ability standard follastics/ are made from polythis form concerning the best of its knowecause it has been disclosure as trade so of the average we	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidably regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databactivity of the company of the comp	e and, to the bile impurity coruses to obtain a to hold the paogy Incorporat ochip Technolity Data Sheets vided by subcod significant to	est of Microch ncentration of a test report a ncking slip on ted's semicon ogy Incorpora s provided by ontract assem oxic metals cc	t t the outer ductor ited cannot raw blers and		Doped Silcon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via nemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam ful.com/global/eng/pages/offerings/industries/chemicals/i rotective "tubes" in which the specific product is shipped nd certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in es in their original packing materials is true and correct to nitee the completeness and accuracy of data in this form I rial suppliers. Supplier information is often protected fron naterial suppliers. Information is provided only as estimat	internal design contical substance is No of this document, the tory concern for an inability standard follastics/ are made from polythis form concerning the best of its knowecause it has been disclosure as trade so of the average we and non-metal materials.	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devichere is no credible reason to believe that the unavoidably regulatory scheme world-wide. The plastics of the trology of trology	e and, to the bile impurity coruses to obtain a to hold the party of the party of the party bata Sheets vided by suifed significant to finished parts claration. The	est of Microch ncentration of a test report a acking slip on ted's semicon ogy Incorpora is provided by portract assem poxic metals cos.	t t the outer ductor ated cannot raw blers and mponents.		Doped Silcon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via memical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam /ul.com/global/eng/pages/offerings/industries/chemicals/n rotective "tubes" in which the specific product is shipped nd certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in es in their original packing materials is true and correct to intee the completeness and accuracy of data in this form I ial suppliers. Supplier information is often protected fron naterial suppliers. Information is provided only as estimate e estimates do not include trace levels of dopants, metals, chip Technology Incorporated does not provide any warr- ict warranties provided by Microchip Technology Incorpo-	ical substance is No of this document, ti tory concern for an ability standard fo lastics/ are made from poly this form concerni the best of its know ecause it has been disclosure as trade as of the average we and non-metal mat inty, express or imp ated and its subsid nyoices. gges to Material Con sers' reliance on the	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. The plastics of the content	e and, to the bele impurity coruses to obtain a to hold the paogy Incorporate ochip Technoli aty Data Sheets vided by subcod significant to finished parts claration. The conditions of see, direct or ince	est of Microch centration of a test report a acking slip on ded's semicon ogy Incorpors is provided by ontract assem oxic metals co is. exclusive, lim ale. These are	t the outer ductor ited cannot raw blers and imponents. ited e provided	0.06	Doped Silcon (mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via nemical substance is absent from the list above, the chem nology Incorporated's knowledge and belief as of the date ical substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam rul.com/global/eng/pages/offerings/industries/chemicals/s rotective "tubes" in which the specific product is shipped nd certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in es in their original packing materials is true and correct to nite the completeness and accuracy of data in this form ial suppliers. Supplier information is often protected from a estimates do not include trace levels of dopants, metals, chip Technology Incorporated does not provide any warract tot warranties provided by Microchip Technology Incorpo rective in the provided of the provided on the protection of the provided on the provid	ical substance is No of this document, ti tory concern for an ability standard fo lastics/ are made from poly this form concerni the best of its know ecause it has been disclosure as trade as of the average we and non-metal mat inty, express or imp ated and its subsid nyoices. gges to Material Con sers' reliance on the	The 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidaby regulatory scheme world-wide. The plastics of the content	e and, to the bele impurity coruses to obtain a to hold the paogy Incorporate ochip Technoli aty Data Sheets vided by subcod significant to finished parts claration. The conditions of see, direct or ince	est of Microch centration of a test report a acking slip on ded's semicon ogy Incorpors is provided by ontract assem oxic metals co is. exclusive, lim ale. These are	t the outer ductor ited cannot raw blers and imponents. ited e provided	0.06	(mg) Total Doped Gold (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.18

ST 8 TSSOP 7:19 PM : 8/8/2012

ICROCHIP Semiconductor Device	e Type: ST 14 (Lead) TSSO	P 4.4mm (D4 / DH)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In" Sub-Component	% Total			28.10	(mg) Total	Mold Compound	% ot Total Weight	46.84
Basic Substance Silica, vitreous (or fused)	CAS Number 60676-86-0	Mold Compound	Weight 39.814	mg/part 23.888	ppm 398.140		Silica, vitreous (or fused)	60676-86-0	85.00	ī
Epoxy Resin	Trade Secret	Mold Compound Mold Compound	4.075	23.888	40,751		Epoxy Resin	Trade Secret	85.00	
Phenolic Resin	Trade Secret	Mold Compound	2.810	1.686	28,104		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.141	0.084	1,405		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	43.249	25.949	432,489			Total	100.00	<u> </u>
Nickel	7440-02-0	Lead Frame	1.153	0.692	11,534	27.25	(mg) Total	Lead Frame	% of Total Weight	45.41
Silver	7440-22-4	Lead Frame	0.758	0.455	7,579	21.23	Copper	7440-50-8	95.24	43.41
Silicon	7440-21-3	Lead Frame	0.204	0.123	2.043		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.045	0.027	454		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	1.214	0.728	12.136		Silicon	7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach	0.328	0.197	3,280		Magnesium	7439-95-4	0.10	
Metal oxide	Trade Secret	Die Attach	0.049	0.030	492		magnooiam	Total	100.00	Ш
Gamma-butyrolactone	96-48-0	Die Attach	0.049	0.030	492	0.98	(mg) Total	Die Attach	% of Total Weight	1.64
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400	0.30	Silver	7440-22-4	74 74	1.04
Gold	7440-21-3	Wire Bond	0.490	0.294	4.900		Epoxy resin	Trade Secret	20	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.280	1.368	22.800		Metal oxide	Trade Secret	3	
1111	7440-31-3 Flating C	TOTALS:	100.000	60.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
				00.000	1,000,000		Garrina-butyroractorie	30-40-0		<u> </u>
				Directive) and	d with EU	2.00	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	3.34
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verific emical substance is absent from the list above, the lology Incorporated's knowledge and belief as of the	s comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in e date of this document, there is	95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor devicence or credible reason to believe that the unavoidable.	(RoHS Recast	est of Microch	ip	2.00	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	3.34
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive bliance with the above EU Directives has been verifice nemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ng compounds used by Microchip meet the UL94 V(s comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in e date of this document, there is regulatory concern for any regula of flammability standard for plastic	95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor devicing credible reason to believe that the unavoidable atory scheme world-wide.	(RoHS Recast e and, to the be le impurity cor	est of Microch	ip the	0.29	1	Chip (Die) 7440-21-3	% of Total Weight	
semiconductor device and its homogenous material tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive obliance with the above EU Directives has been verified nemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of any compounds used by Microchip meet the UL94 V(/ul.com/global/eng/pages/offerings/industries/chem orotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic.	s comply with EU Directive 2002/). ed via internal design controls, such the control of the co	ps/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor deviction credible reason to believe that the unavoidably atory scheme world-wide.	(RoHS Recast	est of Microch ncentration of a test report a	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ollance with the above EU Directives has been verifice nemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ng compounds used by Microchip meet the UL94 Vt /ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sh	s comply with EU Directive 2002/). ed via internal design controls, so chemical substance is NOT an ine date of this document, there is regulatory concern for any regulaticals/plastics/ appear and from polyvinyl control of the concerning substruct to the best of its knowledge in form because it has been compiled from disclosure as trade secret stimates of the average weight of netals, and non-metal materials of the average weight of the corporated and its subsidiaries and invoices.	applier declarations, and /or analytical test data. Intentional ingredient in the semiconductor deviction credible reason to believe that the unavoidable atory scheme world-wide. Its You can access the UL iQTM family of databathloride (PVC) plastic. "Window envelopes" used stances restricted by RoHS in Microchip Technoland belief, as of the date listed in this form. Microchip and belief, as of the date listed in Material Safes and some information may not have been provided in Material Safes and some information may not have been provided and within silicon devices (silicon IC) in the threspect to the information provided in this derecontained in Microchip's standard terms and collarations and shall not be liable for any damage clarations and shall not be liable for any damage	e and, to the bele impurity cor asses to obtain a bele impurity cor asses to obtain a dependent of the pa ogy Incorporat ochip Technolary Data Sheets vided by subcord d significant to finished parts acclaration. The conditions of s	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpore is provided by intract assem exic metals co.	the outer ductor ted cannot raw blers and imponents. ited provided		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.49

ST 14 TSSOP 7:19 PM : 8/8/2012

CROCHIP Semiconductor Devic	e Type: ST 16 (Lead)	TSSOP 4.4mm (D8)		nation Base A pper Alloy (C	. ,			nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total			22.50	(mg) Total	Mold Compound	% ot Total Weight	34,62
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	22.30			Ţ.	34.02
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.427	19.128	294,270		Silica, vitreous (or fused)		85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.012	1.958	30,119		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.077	1.350	20,772		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.068	1,039		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.468	28.904	444,680			Total		
Nickel	7440-02-0	Lead Frame	1.186	0.771	11,859	30.35	(mg) Total	Lead Frame	% of Total Weight	46.69
Silver	7440-22-4	Lead Frame	0.779	0.507	7,793		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.210	0.137	2,101		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.030	467		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	2.472	1.607	24,716		Silicon	7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach	0.668	0.434	6,680		Magnesium	7439-95-4	0.10	
Metal oxide	Trade Secret	Die Attach	0.100	0.065	1,002			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.100	0.065	1,002	2.17	(mg) Total	Die Attach	% of Total Weight	3.34
Silicon	7440-21-3	Chip (Die)	12.340	8.021	123,400		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.610	0.397	6,100		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.400	1.560	24,000		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	65.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.0650 (g Total Mass						Total	100.00	•
2002/53/EC (End-of-Life Vehicles (ELV) Directiv	е).	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	8.02	Total (mg)	Chip (Die)	% of Total Weight	12.34
e 2002/53/EC (End-of-Life Vehicles (ELV) Directivence with the above EU Directives has been verified.	e). ied via internal design conti	rols, supplier declarations, and /or analytical test data.	•	·		8.02	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	100	12.34
2002/53/EC (End-of-Life Vehicles (ELV) Directivence with the above EU Directives has been verifical substance is absent from the list above, the gy incorporated's knowledge and belief as of the substance, if any, is not below the threshold of compounds used by Microchip meet the UL94 Very the substance.	e). ed via internal design control e chemical substance is NO le date of this document, the regulatory concern for any for flammability standard for	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidab	e and, to the be	est of Microch	nip the	0.40	T	7440-21-3	100	
2002/53/EC (End-of-Life Vehicles (ELV) Directive ce with the above EU Directives has been verifical substance is absent from the list above, the gy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of compounds used by Microchip meet the UL94 Veom/global/eng/pages/offerings/industries/chenective "tubes" in which the specific product is se	e). ded via internal design control chemical substance is NO ded date of this document, the regulatory concern for any of flammability standard for licals/plastics/	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidabor regulatory scheme world-wide.	e and, to the be le impurity con ses to obtain a	est of Microch ncentration of a test report a	nip the		Doped Silicon	7440-21-3 Total	100	
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive nace with the above EU Directives has been verifical substance is absent from the list above, through Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of compounds used by Microchip meet the UL94 v.com/global/eng/pages/offerings/industries/chentective "tubes" in which the specific product is secretain "reels" may be made from PVC plastic.	e). ed via internal design control e chemical substance is NO the date of this document, the regulatory concern for any of flammability standard for hicals/plastics/ hipped are made from poly	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databation with the control of the co	e and, to the be le impurity con ses to obtain a to hold the pa	est of Microch ncentration of a test report a cking slip on	the tte		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
a 2002/53/EC (End-of-Life Vehicles (ELV) Directive note with the above EU Directives has been verifical substance is absent from the list above, the ogy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of compounds used by Microchip meet the UL94 Vicom/global/eng/pages/offerings/industries/chentective "tubes" in which the specific product is secretain "reels" may be made from PVC plastic. Ip Technology Incorporated believes the information their original packing materials is true and coach the completeness and accuracy of data in this suppliers. Supplier information is often protecterial suppliers. Information is provided only as the suppliers.	e). ed via internal design control ed chemical substance is NO the date of this document, the regulatory concern for any for flammability standard for nicals/plastics/ hipped are made from poly attion in this form concernin rrect to the best of its know form because it has been of def from disclosure as trade restimates of the average wei	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidabor regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databa	e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem whice metals cc	t the outer ductor raw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verification with the above EU Directives has been verification with the above EU Directives has been verification with the substance is absent from the list above, the logy incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of grompounds used by Microchip meet the UL94 V. L.com/global/eng/pages/offerings/industries/chemotective "tubes" in which the specific product is still certain "reels" may be made from PVC plastic. In Technology Incorporated believes the information in their original packing materials is true and content their original packing materials is true and content their original packing materials is often protectional suppliers. Supplier information is often protectional suppliers. Information is provided only as estimates do not include trace levels of dopants, which Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provide and towarranties provided by Microchip Technology Incorporated does not provided on the provided on the provided by Microchip Technology Incorporated does not provided and towarranties does not provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated d	e). ded via internal design control e chemical substance is NO te date of this document, the regulatory concern for any for flammability standard for nicals/plastics/ hipped are made from poly tition in this form concernin rrect to the best of its know form because it has been of def from disclosure as trade stimates of the average we metals, and non-metal mate by warranty, express or impl teorporated and its subsidia	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databation of the complete of the c	e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technole ty Data Sheets tided by subco d significant to finished parts claration. The	est of Microch icentration of a test report a cking slip on eed's semicon ogy Incorpora is provided by intract assem oxic metals co	t the outer adductor ated cannot raw blers and omponents.		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verification with the above the dig compounds used by Microchip meet the UL94 V.L.com/global/eng/pages/offerings/industries/chenotective "tubes" in which the specific product is sid certain "reels" may be made from PVC plastic. In Technology Incorporated believes the information in their original packing materials is true and course the completeness and accuracy of data in this all suppliers. Supplier information is often protective rial suppliers. Information is provided only as eastimates do not include trace levels of dopants, in the Technology Incorporated does not provide an twarranties provided by Microchip Technology Incorporated recknowledgement in prodiscialims any duty to notify users of updates	e). ded via internal design control e chemical substance is NO le date of this document, the regulatory concern for any for flammability standard for nicals/plastics/ hipped are made from poly stion in this form concernin rrect to the best of its know form because it has been of def from disclosure as trade sistimates of the average we metals, and non-metal mate y warranty, express or impl corporated and its subsidie and invoices. or changes to Material Cont of the users' reliance on the	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of databation of the complete of the contained within silicon devices (silicon IC) in the contained within silicon devices (silicon IC) in the complete of the contained within silicon devices (silicon IC) in the complete of the contained within silicon devices (silicon IC) in the complete of t	e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technold sty Data Sheets vided by subco d significant to finished parts claration. The e conditions of s.	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem oxic metals con icentract assem oxic metal	t the outer ductor ated cannot raw blers and amponents.	0.40	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 100.00 % of Total Weight 100 100.00	0.61
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verifimical substance is absent from the list above, the logy Incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of a compounds used by Microchip meet the UL94 v.com/global/eng/pages/offerings/industries/chentective "tubes" in which the specific product is a certain "reels" may be made from PVC plastic. It is their original packing materials is true and complete their original packing materials is true and complete. Information is provided only as a stimates do not include trace levels of dopants, in preciping the provided by Microchip Technology Inchip's quotations, sales order acknowledgement in their original packing disclaims any duty to notify users of updates se, suffered by users or third parties as a result of the provided by the control or their packing of the provided by the control or the provided by the provid	e). ded via internal design control e chemical substance is NO le date of this document, the regulatory concern for any for flammability standard for nicals/plastics/ hipped are made from poly stion in this form concernin rrect to the best of its know form because it has been of def from disclosure as trade sistimates of the average we metals, and non-metal mate y warranty, express or impl corporated and its subsidie and invoices. or changes to Material Cont of the users' reliance on the	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidable regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databativity of control of the contro	e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technold sty Data Sheets vided by subco d significant to finished parts claration. The e conditions of s.	est of Microch icentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by intract assem oxic metals con icentract assem oxic metal	t the outer ductor ated cannot raw blers and amponents.	0.40	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.61

ST 16 TSSOP 7:19 PM : 8/8/2012

AICROCHIP Semiconductor Devi	ce Type: ST 20 (Lead) T	SSOP 4.4mm (G2 / GE)		nation Base A pper Alloy (C	•			nogeneous Materials: e.g. pc boards, display		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	37.22	(mg) Total	Mold Compound	% ot Total Weight	47.72
Silica, vitreous (or fused)	60676-86-0	Mold Compound	40.562	31.638	405,620		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.152	3.238	41,516		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.863	2.233	28,632		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.143	0.112	1,432		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	40.725	31.766	407,251		μ	Total	100.00	
Nickel	7440-02-0	Lead Frame	1.086	0.847	10,861	33.35	(mg) Total	Lead Frame	% of Total Weight	42.76
							_			
Silver	7440-22-4	Lead Frame	0.714	0.557	7,137		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.192	0.150	1,924		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.043	0.033	428		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	1.317	1.027	13,172		Silicon	7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach	0.356	0.278	3,560		Magnesium	7439-95-4	0.10	
Metal oxide	Trade Secret	Die Attach	0.053	0.042	534			Total		
Gamma-butyrolactone	96-48-0	Die Attach	0.053	0.042	534	1.39	(mg) Total	Die Attach	% of Total Weight	1.78
Silicon	7440-21-3	Chip (Die)	4.690	3.658	46,900		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.540	0.421	5,400		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.510	1.958	25,100		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	78.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.0780 g	Total Mass						Total	100.00	
s semiconductor device and its homogenous material Directive 2002/53/EC (End-of-Life Vehicles (ELV) Direc		002/95/EC (RoHS Directive), EU Directive 2011/6	5/EU (RoHS Re	sact Directive						
Silver and a solution of the contract of the c	ctive).		., (cast Directive) and with	3.66	Total (mg)	Chip (Die)	% of Total Weight	4.69
npliance with the above EU Directives has been verific	ed via internal design controls		lata.		,	3.66	Total (mg) Doped Silicon	7440-21-3	100	4.69
npliance with the above EU Directives has been verifii chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V	ed via internal design controls o chemical substance is NOT a le date of this document, there regulatory concern for any re 0 flammability standard for pl	in intentional ingredient in the semiconductor de is no credible reason to believe that the unavoi gulatory scheme world-wide.	ata. evice and, to thidable impurity	he best of Mic / concentratio	rochip n of the	0.42	1		100	4.69 0.54
npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of	ed via internal design controls chemical substance is NOT a clede of this document, there regulatory concern for any real of flammability standard for places of the clede of	in intentional ingredient in the semiconductor do is no credible reason to believe that the unavoi gulatory scheme world-wide. astics. You can access the UL iQTM family of da	lata. evice and, to the idable impurity atabases to obtain	he best of Micr concentration	rochip n of the ort at		Doped Silicon	7440-21-3 Total	100	
npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of th mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V://ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shadown and the specific product is shadown.	ed via internal design controls of chemical substance is NOT as the date of this document, there regulatory concern for any resultance of flammability standard for place of the date of the standard for place of the standard for the standard forest for the standard for the standard for the standard for the st	in intentional ingredient in the semiconductor do is no credible reason to believe that the unavoigulatory scheme world-wide. astics. You can access the UL iQTM family of do yellow the content of the	lata. evice and, to the idable impurity atabases to obsused to hold the hology Incorp Microchip Tecl Material Safety inticipated sign	he best of Mici y concentratio tain a test repo e packing slip porated's semi hnology Incor y Data Sheets by subcontraci ifficant toxic n	rochip n of the on the outer iconductor porated provided by t assemblers netals		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V://ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and cornot guarantee the completeness and accuracy of data material suppliers. Supplier information is often prot raw material suppliers. Information is provided only	ed via internal design controls of chemical substance is NOT as the date of this document, there regulatory concern for any regulatory concerning struct to the best of its knowled as in this form because it has bected from disclosure as trade as estimates of the average we of dopants, metals, and non-ity warranty, express or implied corporated and its subsidiaries	in intentional ingredient in the semiconductor do is no credible reason to believe that the unavoigulatory scheme world-wide. astics. You can access the UL iQTM family of do you can access the UL iQTM fami	evice and, to the idable impurity atabases to observe the idable impurity atabases to observe the idable impurity in the idable	he best of Micry concentration tain a test representation or at the concentration of the concentration of the finished process of the concentration of the concentration of the finished process of th	rochip n of the ort at on the outer iconductor porated provided by t assemblers netals arts. , limited		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
npliance with the above EU Directives has been verific chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V://ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is stand certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the informatices in their original packing materials is true and contout guarantee the completeness and accuracy of data material suppliers. Supplier information is often protour aw material suppliers. Information is provided only apponents. These estimates do not include trace levels rochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide an	ed via internal design controls of chemical substance is NOT as the date of this document, there regulatory concern for any regulatory concerning some concerning	in intentional ingredient in the semiconductor de is no credible reason to believe that the unavoigulatory scheme world-wide. astics. You can access the UL iQTM family of de ignormal de	ata. evice and, to the idable impurity atabases to obsused to hold the interest of the idable impurity. The idable is the idable interest of the idable interes	he best of Mici y concentration tain a test repose e packing slip porated's semi hnology incor y Data Sheets, by y subcontract inificant toxic in the finished p	rochip n of the on the outer iconductor porated provided by t assemblers netals parts. , limited e are	0.42	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.54
pipliance with the above EU Directives has been verificated in the list above, the hoology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 V://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is stand certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information is often protective in their original packing materials is true and cornot guarantee the completeness and accuracy of data material suppliers. Supplier information is often proteraw material suppliers. Information is provided only apponents. These estimates do not include trace levels prochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Indied in Microchip's quotations, sales order acknowle rochip disclaims any duty to notify users of updates of therwise, suffered by users or third parties as a result the prochamber of the p	ed via internal design controls of chemical substance is NOT as the date of this document, there regulatory concern for any regulatory concerning some concerning	in intentional ingredient in the semiconductor de is no credible reason to believe that the unavoigulatory scheme world-wide. astics. You can access the UL iQTM family of de ignormal de	ata. evice and, to the idable impurity atabases to obsused to hold the interest of the idable impurity. The idable is the idable interest of the idable interes	he best of Mici y concentration tain a test repose e packing slip porated's semi hnology incor y Data Sheets, by y subcontract inificant toxic in the finished p	rochip n of the on the outer iconductor porated provided by t assemblers netals parts. , limited e are	0.42	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.54

ST 14 TSSOP 7:19 PM : 8/8/2012

MICROCHIP Semiconductor Devi	ce Type: QU8E 08 (Lead) US	SON/LIDEN 2×2×4.55mm. (ON)		nation Base . oper Alloy (C	,		•	nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Je Type. QUOL 00 (Lead) 03	"Contained In"	% Total	ı				1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	9.40	(mg) Total	Mold Compound	% ot Total Weight	75.18
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676.620		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3,646	0.456	36.462		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469	2.69	(mg) Total	Lead Frame	% of Total Weight	21.53
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weight	1.00
Tin	7440-31-5 Plating of	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900		Silver	7440-22-4	80.00	
		TOTALS:	100.000	12.500	1,000,000		Epoxy Resin	Trade secret	20.00	
								Total	100.00	
	0.0125 g Tota	al Mass						Iotai	100.00	
nis semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 2002/95/		HS Recast Di	rective) and	with EU	0.14	(mg) Total	Chip (Die)	% of Total Weight	1.09
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified	s comply with EU Directive 2002/95/I d via internal design controls, supp	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data.		,	_	0.14	(mg) Total Gallium arsenide	1		1.09
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the orthology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 VO	comply with EU Directive 2002/95//i d via internal design controls, supp chemical substance is NOT an inten date of this document, there is no egulatory concern for any regulator flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide.	nd, to the best	of Microchipentration of the		0.14	 	Chip (Die) 1303-00-0	% of Total Weight	0.31
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the contrology incorporated's knowledge and belief as of the lemical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemine protective "tubes" in which the specific product is ship	comply with EU Directive 2002/95//i. d via internal design controls, supponential substance is NOT an intendate of this document, there is not egulatory concern for any regulator flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases	nd, to the best npurity conce to obtain a te	t of Microchip entration of the	o he		Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the achnology Incorporated's knowledge and belief as of the lemical substance, if any, is not below the threshold of ro- lolding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemicals.	comply with EU Directive 2002/95//i. d via internal design controls, supponential substance is NOT an intendate of this document, there is not egulatory concern for any regulator flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases	nd, to the best npurity conce to obtain a te	t of Microchip entration of the	o he		Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the contrology incorporated's knowledge and belief as of the lemical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemine protective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/i. d via internal design controls, supponential substance is NOT an intendate of this document, there is no regulatory concern for any regulator flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chloron in this form concerning substanect to the best of its knowledge and orm because it has been compiled is colosure as trade secrets and some tes of the average weight of these p	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases wride (PVC) plastic. "Window envelopes" used to lance restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchipased on the ranges provided in Material Safety I information may not have been provided by sub- parts and the average weight of anticipated significances.	nd, to the best mpurity conce to obtain a te hold the pack Incorporated ip Technolog Data Sheets p contract asse icant toxic me	of Microchip entration of the est report at ing slip on the 's semicond y Incorporate rovided by ra mblers and r	ne outer uctor ed cannot aw material		Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the openical substance is absent from the list above, the openical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 VO tp://ul.com/global/eng/pages/offerings/industries/chemion the protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information which is true and corporate the completeness and accuracy of data in this full pipilers. Supplier information is often protected from displaterial suppliers. Information is provided only as estima	comply with EU Directive 2002/95/i. d via internal design controls, supponential substance is NOT an intendate of this document, there is not egulatory concern for any regulator flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chloron in this form concerning substanect to the best of its knowledge and form because it has been compiled is colosure as trade secrets and some tes of the average weight of these petals, and non-metal materials cont warranty, express or implied, with r d and its subsidiaries are contained	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lifer declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases wride (PVC) plastic. "Window envelopes" used to I loces restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchi based on the ranges provided in Material Safety I information may not have been provided by sub- larts and the average weight of anticipated signification within silicon devices (silicon IC) in the fin respect to the information provided in this declar	to obtain a te hold the pack Incorporated ip Technolog Data Sheets p contract asse- icant toxic me ished parts.	e of Microchip entration of the est report at ing slip on the 's semicond y Incorporate rovided by ramblers and retals compor	ne outer uctor ed cannot w material raw nents.		Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the exchology Incorporated's knowledge and belief as of the termical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 VO tp://ul.com/global/eng/pages/offerings/industries/chemile protective "tubes" in which the specific product is ship ax and certain "reels" may be made from PVC plastic. Increase in their original packing materials is true and cornarantee the completeness and accuracy of data in this full pilers. Supplier information is often protected from displiers. Suppliers. Information is provided only as estimates estimates do not include trace levels of dopants, m	comply with EU Directive 2002/95/i. d via internal design controls, support of via	EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide. You can access the UL iQTM family of databases ride (PVC) plastic. "Window envelopes" used to lead to the lead of the lead of the lead of the lead of the lead on the ranges provided in Material Safety I information may not have been provided by sub- larts and the average weight of anticipated significated within silicon devices (silicon IC) in the fin- trespect to the information provided in this declar d in Microchip's standard terms and conditions or rations and shall not be liable for any damages, or	nd, to the best inpurity concern to obtain a te hold the pack incorporated ip Technolog Data Sheets p contract asseciant toxic mished parts. ation. The ex f sale. These direct or indirect or indire	est report at ing slip on the 's semicond y Incorporate rovided by ramblers and retals compor	ne outer uctor ed cannot aw material aw eents. ed product in	0.04	Gallium arsenide (mg) Total Doped Gold	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.31

QU8E 08 USON_UDFN 7:20 PM : 8/8/2012

Halogen-Free Compliant to IEC 61249-2-21:2003

Semiconductor Device Type: QUAE 08 (Lead) USON 2x2x0.55mm (UA)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
		"Contained In"	% Total			9.40	(mg) Total	Mold Compound	%ot Total Weight	75.18
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	*****				
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469	2.69	(mg) Total	Lead Frame	% of Total Weight	21.53
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weight	1.00
Tin	7440-31-5 Plating of	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		0.111	8,900		Silver	7440-22-4	80.00	
		TOTALS	: 100.000	12.500	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0125 g Tota comply with EU Directive 2002/95/l		oHS Recast D	rective) and	with EU	0.14	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	1.09
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified	comply with EU Directive 2002/95/I	EC (RoHS Directive), EU Directive 2011/65/EU (R		·		0.14	(mg) Total Gallium arsenide			1.09
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the cl chnology Incorporated's knowledge and belief as of the cemical substance, if any, is not below the threshold of re Iding compounds used by Microchip meet the UL94 V0 fi	via internal design controls, supp hemical substance is NOT an intendate of this document, there is no gulatory concern for any regulator lammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (R lier declarations, and /or analytical test data. stional ingredient in the semiconductor device a credible reason to believe that the unavoidable in y scheme world-wide.	and, to the besimpurity conce	of Microchipentration of the	,	0.14	-	Chip (Die) 1303-00-0	% of Total Weight	0.31
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the clonology Incorporated's knowledge and belief as of the cemical substance, if any, is not below the threshold of reliding compounds used by Microchip meet the UL94 V0 ftp://ul.com/global/eng/pages/offerings/industries/chemics e protective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/l via internal design controls, supp hemical substance is NOT an inten date of this document, there is no gulatory concern for any regulator lammability standard for plastics. als/plastics/	EC (RoHS Directive), EU Directive 2011/65/EU (R lier declarations, and /or analytical test data. stional ingredient in the semiconductor device a credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of database	and, to the besimpurity conce	of Microchipentration of the	o ne		Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	
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rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the clothology Incorporated's knowledge and belief as of the cemical substance, if any, is not below the threshold of reolding compounds used by Microchip meet the UL94 V0 fip://ul.com/global/eng/pages/offerings/industries/chemicate protective "tubes" in which the specific product is ship at and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information vices in their original packing materials is true and correarantee the completeness and accuracy of data in this forpoliers. Supplier information is often protected from discaterial suppliers. Information is provided only as estimate	via internal design controls, supp nemical substance is NOT an intendate of this document, there is no a gulatory concern for any regulator lammability standard for plastics. als/plastics/ upped are made from polyvinyl chlown in this form concerning substanct to the best of its knowledge and rm because it has been compiled I closure as trade secrets and some ses of the average weight of these p	EC (RoHS Directive), EU Directive 2011/65/EU (R lier declarations, and /or analytical test data. stional ingredient in the semiconductor device a credible reason to believe that the unavoidable ir y scheme world-wide. You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog lelief, as of the date listed in this form. Microchased on the ranges provided in Material Safety information may not have been provided by sul arts and the average weight of anticipated signi	ind, to the besimpurity conce s to obtain a to hold the pack y Incorporated hip Technolog Data Sheets p becontract asses	of Microchip entration of the est report at ing slip on the 's semicond y Incorporate rovided by moblers and r	ne outer uctor d cannot aw material		Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
nis semiconductor device and its homogenous materials irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the clecknology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of reolding compounds used by Microchip meet the UL94 V0 ftp://ul.com/global/eng/pages/offerings/industries/chemicane protective "tubes" in which the specific product is ship ox and certain "reels" may be made from PVC plastic. Incrochip Technology Incorporated believes the information begics in their original packing materials is true and correlarantee the completeness and accuracy of data in this fouppliers. Supplier information is often protected from discaterial suppliers. Information is provided only as estimate aterial suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, me icrochip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated icrochip's quotations, sales order acknowledgement, and	via internal design controls, supp hemical substance is NOT an intendate of this document, there is no a gulatory concern for any regulator lammability standard for plastics. als/plastics/ upped are made from polyvinyl chlown in this form concerning substanct to the best of its knowledge and rm because it has been compiled iclosure as trade secrets and some as of the average weight of these ptals, and non-metal materials contivarranty, express or implied, with reand its subsidiaries are contained	EC (RoHS Directive), EU Directive 2011/65/EU (R lier declarations, and /or analytical test data. ational ingredient in the semiconductor device a credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog belief, as of the date listed in Material Safety information may not have been provided by su carts and the average weight of anticipated signification within silicon devices (silicon IC) in the file respect to the information provided in this declar	ind, to the besimpurity concess to obtain a test of hold the pack by Incorporated hip Technolog Data Sheets pacontract as ficiant toxic minished parts.	est report at ing slip on the 's semicond y Incorporate rovided by ra- mblers and retals compor-	ne outer uctor ed cannot w material aw eents.		Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the clandology Incorporated's knowledge and belief as of the cernical substance, if any, is not below the threshold of re Iding compounds used by Microchip meet the UL94 V0 fp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the information vices in their original packing materials is true and correarantee the completeness and accuracy of data in this forpoliers. Supplier information is often protected from disciterial suppliers. Information is provided only as estimate see estimates do not include trace levels of dopants, metrochip Technology Incorporated does not provide any wrranties provided by Microchip Technology Incorporated	via internal design controls, supp hemical substance is NOT an intendate of this document, there is no gulatory concern for any regulator lammability standard for plastics. als/plastics/ oped are made from polyvinyl chlown in this form concerning substanct to the best of its knowledge and rubeaues it has been compiled closure as trade secrets and some so of the average weight of these ptals, and non-metal materials cont varranty, express or implied, with ruland its subsidiaries are contained invoices.	EC (RoHS Directive), EU Directive 2011/65/EU (R lier declarations, and /or analytical test data. Itional ingredient in the semiconductor device a credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog libelief, as of the date listed in this form. Microchip based on the ranges provided in Material Safety information may not have been provided by suitarts and the average weight of anticipated significants within silicon devices (silicon IC) in the file respect to the information provided in this declat in Microchip's standard terms and conditions rations and shall not be liable for any damages,	ind, to the bestimpurity concerns to obtain a test of hold the pack by Incorporated hip Technolog Data Sheets potential toxic minished parts. I aration. The ex of sale. These direct or indirect or	of Microchipentration of the est report at ing slip on the semicond y Incorporate rovided by ramblers and retals comportates comportate provided dect, consequents	ne outer uctor ed cannot aw material aw eents. ed product in	0.04	Gallium arsenide (mg) Total Doped Gold	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.31

QUAE 08 USON 7:20 PM: 8/8/2012

Semiconductor Device Type: QX6E 06 (Lead) XSON 1.5x1.5x0.45mm (QX)				nation Base opper Alloy (,		5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Schiliconductor Bevic	C TYPE: QXOL OU (Lead) XXX	"Contained In"	% Total					1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	4.18	(mg) Total	Mold Compound	% ot Total Weight	68.55
Silica, fused	60676-86-0	Mold Compound	61.695	3.763	616,950		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.325	0.203	33,247		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.325	0.203	33,247		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.206	0.013	2,057		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	23.696	1.445	236,960			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.632	0.039	6,320	1.52	(mg) Total	Lead Frame	% of Total Weight	24.88
Silicon	7440-21-3	Lead Frame	0.112	0.007	1,120		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.415	0.025	4,152		Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	0.990	0.060	9,900		Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.198	0.012	1,980		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660			Total	100.00	•
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330	0.08	(mg) Total	Die Attach	% of Total Weight	1.32
Polymeric material	Trade secret	Die Attach	0.033	0.002	330		Ag	7440-22-4	75.00	
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36.300		Epoxy resin	Trade secret	15.00	
Au	7440-57-5	Wire Bond	0.590	0.036	5,899		Aliphatic anhydride	Trade secret	5.00	
	Misc.	Wire Bond	0.000	0.000	1		2-Butoxyethyl acetate	112-07-2	2.50	
IMDULITY										
impurity Tin			1.030	0.063	10.300		Polymeric material	Trade secret	3	
		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou			10,300 1.000.000		Polymeric material	Trade secret Total		<u>I</u>
Tin	7440-31-5 Plating or 0.0061 g Tota	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS al Mass	S: 100.000	6.100	1,000,000	0.22	Polymeric material (mg) Total	Trade secret Total Chip (Die)	3 100.00 % of Total Weight	
	7440-31-5 Plating or 0.0061 g Tota s comply with EU Directive 2002/95	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS al Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU	S: 100.000 J (RoHS Recas	6.100	1,000,000	0.22		Total	100.00	3.63
s semiconductor device and its homogenous material active 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of	7440-31-5 Plating or 0.0061 g Tota s comply with EU Directive 2002/95 ct dvia internal design controls, sup chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulator	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS at Mass SEC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidal pry scheme world-wide.	J (RoHS Recas	6.100 t Directive) and the contraction of the cont	1,000,000 nd with EU ship of the	0.22	(mg) Total	Total Chip (Die) 1303-00-0	100.00 % of Total Weight	3.63
s semiconductor device and its homogenous material active 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the thnology incorporated's knowledge and belief as of the	7440-31-5 Plating or 0.0061 g Tota s comply with EU Directive 2002/95 b. d via internal design controls, sup chemical substance is NOT an inte d date of this document, there is no regulatory concern for any regulate l flammability standard for plastics	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS at Mass SEC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidal pry scheme world-wide.	J (RoHS Recas	6.100 t Directive) and the contraction of the cont	1,000,000 nd with EU ship of the		(mg) Total GaAs	Total Chip (Die) 1303-00-0 Total	100.00 % of Total Weight 100	3.63
s semiconductor device and its homogenous material active 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of iding compounds used by Microchip meet the UL94 VC	0.0061 g Tota s comply with EU Directive 2002/95 b. d via internal design controls, sup chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulator d flammability standard for plastics icals/plastics/	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS at Mass ### Mass ### TOTALS at	3: 100.000 J (RoHS Recas ce and, to the lole impurity co	6.100 t Directive) and the properties of Microconcentration of a test report	1,000,000 Ind with EU Chip of the		(mg) Total GaAs (mg) Total	Total Chip (Die) 1303-00-0 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	3.63
s semiconductor device and its homogenous material active 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the winical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 VC:://ul.com/global/eng/pages/offerings/industries/chemies protective "tubes" in which the specific product is she	0.0061 g Tota s comply with EU Directive 2002/95 comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulato flammability standard for plastics icals/plastics/ iipped are made from polyvinyl chl ion in this form concerning substarect to the best of its knowledge an form because it has been compiled of from disclosure as trade secrets stimates of the average weight of the	nexternal leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS at Mass Al	G: 100.000 J (RoHS Recas Lee and, to the I cle impurity co ases to obtain d to hold the p logy Incorpora rochip Techno fety Data Sheel wided by subc ded significant if	6.100 t Directive) at present of Microconcentration of a test report acking slip of ted's semicology incorpo s provided by ontract asseroxic metals	1,000,000 and with EU thip of the at n the outer onductor rated cannot y raw nblers and		(mg) Total GaAs (mg) Total Au	Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 99.99	0.59
s semiconductor device and its homogenous material active 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verifies chemical substance is absent from the list above, the shnology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shat and certain "reels" may be made from PVC plastic. rochip Technology incorporated believes the informatices in their original packing materials is true and contrantee the completeness and accuracy of data in this terial suppliers. Supplier information is often protecter material suppliers. Information is provided only as estimaterial suppliers.	0.0061 g Tota s comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte d date of this document, there is no regulatory concern for any regulator figuratory concern for any regulator figuratory concern for any regulator figuratory concern for any regulator figurator on concerning substance in this form concerning substance to the best of its knowledge an form because it has been compiled from disclosure as trade secrets stimates of the average weight of the of dopants, metals, and non-metal warranty, express or implied, with corporated and its subsidiaries are	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hou TOTALS at Mass Mass MEC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. entional ingredient in the semiconductor device or edible reason to believe that the unavoidal pry scheme world-wide. b. You can access the UL iQTM family of databourde (PVC) plastic. "Window envelopes" used to be concerned to the form. Microchip Technologies, as of the date listed in this form. Microchip Technologies and some information may not have been processed and some information within silicon devices (some processed to the information provided in this division of the processed and the processed to the information provided in this division.	G: 100.000 J (RoHS Recas Lee and, to the I cle impurity co ases to obtain d to hold the p logy Incorpora rochip Techno fety Data Sheet wided by subc ded significant to illicon IC) in the eclaration. The	6.100 t Directive) at part of Micros neentration of a test report acking slip of test of the service of the se	1,000,000 and with EU chip of the at n the outer anductor rated cannot y raw nblers and tts. mited		(mg) Total GaAs (mg) Total Au	Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Misc.	100.00 % of Total Weight 100 100.00 % of Total Weight 99.99 0.01	0.59
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QX6E 06 XSON 7:20 PM : 8/8/2012

Semiconductor Device Type: QX8E 08 (Lead) XSON 2x2x0.45mm (Q7) "Contained In"				nation Base . pper Alloy (0		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Markir and/or Pkg. Labeling e3
Basic Substance	CAS Number	` ,	% Total Weight	mg/part	ppm	8.14	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	718.200		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.870	0.395	38,703		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.870	0.395	38,703		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.239	0.024	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.000	1.020	100,003			Total	100.00	•
Nickel	7440-02-0	Lead Frame	0.267	0.027	2,667	1.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-21-3	Lead Frame	0.047	0.005	473		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.011	0.001	105		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.175	0.018	1,752		Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	0.563	0.057	5,625		Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.113	0.011	1,125		Silver	7440-22-4	1.67]
Aliphatic anhydride	Trade secret	Die Attach	0.038	0.004	375			Total	100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.019	0.002	188	0.08	(mg) Total	Die Attach	% of Total Weight	0.75
Polymeric material	Trade secret	Die Attach	0.019	0.002	188		Ag	7440-22-4	75.00	
GaAs	1303-00-0	Chip (Die)	7.500	0.765	75,000		Epoxy resin	Trade secret	15.00	
Gold	7440-57-5	Wire Bond	0.200	0.020	2,000		Aliphatic anhydride	Trade secret	5.00	
Tin	7440-31-5 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500		2-Butoxyethyl acetate	112-07-2	2.50	
				10.200	1,000,000		Polymeric material			
	0.0102 g Tota comply with EU Directive 2002/95/6					0.77	(mg) Total	Trade secret Total Chip (Die)	3 100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl nnology Incorporated's knowledge and belief as of the c	comply with EU Directive 2002/95/6 via internal design controls, suppl nemical substance is NOT an inten late of this document, there is no o	al Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device an credible reason to believe that the unavoidable in	HS Recast Di	rective) and v	with EU	0.77	,	Total	100.00	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the clinology incorporated's knowledge and belief as of the chical substance, if any, is not below the threshold of reining compounds used by Microchip meet the UL94 V0 files.	via internal design controls, suppl nemical substance is NOT an inten late of this document, there is no o gulatory concern for any regulator lammability standard for plastics.	al Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device an credible reason to believe that the unavoidable in y scheme world-wide.	HS Recast Di	rective) and vertices and verti	with EU	0.77	(mg) Total	Total Chip (Die) 1303-00-0	100.00 % of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). In pliance with the above EU Directives has been verified chemical substance is absent from the list above, the chhology Incorporated's knowledge and belief as of the comical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0 floor/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship	via internal design controls, suppl nemical substance is NOT an inten late of this document, there is no o gulatory concern for any regulator lammability standard for plastics.	al Mass EC (RoHS Directive), EU Directive 2011/65/EU (Roblet declarations, and /or analytical test data. Itional ingredient in the semiconductor device and credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of databases	HS Recast Di	rective) and vertices of Microchipentration of the est report at	with EU		(mg) Total GaAs	Chip (Die) 1303-00-0 Total	100.00 % of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the chical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl.://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information ces in their original packing materials is true and correspondent the completeness and accuracy of data in this foliers. Supplier information is often protected from discertal suppliers. Information is provided only as estimate	via internal design controls, supply with EU Directive 2002/95/ft via internal design controls, supply memical substance is NOT an intendate of this document, there is no orgulatory concern for any regulator lammability standard for plastics. Als/plastics/upped are made from polyvinyl chloring in this form concerning substanct to the best of its knowledge and rm because it has been compiled tolosure as trade secrets and some sof the average weight of these p	al Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device an credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of databases ride (PVC) plastic. "Window envelopes" used to h ces restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchi pased on the ranges provided in Material Safety E information may not have been provided by sub- arts and the average weight of anticipated signifi	HS Recast Di ad, to the best inpurity conce to obtain a te hold the pack Incorporated ip Technolog pata Sheets p contract asse icant toxic me	rective) and very confident of the confident at the confident at the confident at the confident and th	with EU ne ne outer uctor dc cannot two material aw		(mg) Total GaAs (mg) Total	Total Chip (Die) 1303-00-0 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
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ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the chical substance, if any, is not below the threshold of reining compounds used by Microchip meet the UL94 V0 fl/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Suchip Technology Incorporated believes the information ces in their original packing materials is true and correantee the completeness and accuracy of data in this foliars. Supplier information is often protected from discrital suppliers. Information is provided only as estimate are estimates do not include trace levels of dopants, metabochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated	via internal design controls, supply with EU Directive 2002/95/ft via internal design controls, supply nemical substance is NOT an intendate of this document, there is not gulatory concern for any regulator lammability standard for plastics. als/plastics/ upped are made from polyvinyl chlor in in this form concerning substanct to the best of its knowledge and rm because it has been compiled belosure as trade secrets and some strade secrets and some petals, and non-metal materials contrarranty, express or implied, with rand its subsidiaries are contained invoices.	al Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. tional ingredient in the semiconductor device an credible reason to believe that the unavoidable in y scheme world-wide. You can access the UL iQTM family of databases ride (PVC) plastic. "Window envelopes" used to be ces restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchi based on the ranges provided in Material Safety E information may not have been provided by sub- arts and the average weight of anticipated significated within silicon devices (silicon IC) in the fini- espect to the information provided in this declar. I in Microchip's standard terms and conditions of rations and shall not be liable for any damages, of	HS Recast Di	rective) and very confident of the set report at ing slip on the set of the s	with EU ne ne outer uctor ed cannot w material aw eents. ed product in	0.02	(mg) Total GaAs (mg) Total Gold	Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matter Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.2

QX8E 08 XSON 7:20 PM : 8/8/2012

Semiconductor Device Type: XX8E 08 (Lead) X2SON 2x2x0.35mm (X8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
		"Contained In"	% Total			2.86	(mg) Total	Mold Compound	% ot Total Weight	51.99
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			·	ū	
Silica, fused Epoxy Resin	60676-86-0 Trade Secret	Mold Compound Mold Compound	46.791 2.522	2.574 0.139	467,910 25,215		Silica, fused Epoxy Resin	60676-86-0 Trade Secret	90.00 4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.139	25,215		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.009	1.560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.649	2.126	386,488		Carbon Black	Total	100.00	l
Nickel	7440-02-0	Lead Frame	1.031	0.057	10,307	2.23	(mg) Total	Lead Frame	% of Total Weight	40.58
Silicon	7440-21-3	Lead Frame	0.183	0.010	1,826	2.20	Copper	7440-50-8	95.24	10.00
Magnesium	7439-95-4	Lead Frame	0.041	0.002	406		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.677	0.037	6,773		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	1.888	0.104	18,880		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4,720		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23,600			Total	100.00	-
Doped Gold	7440-57-5	Wire Bond	0.720	0.040	7,200	0.13	(mg) Total	Die Attach	% of Total Weight	2.36
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19,900		Silver	7440-22-4	80.00	
		TOTALS:	100.000	5.500	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0055	g Total Mass						Total	100.00	-
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data.	RoHS Recas	t Directive) ar	nd with EU	0.13	(mg) Total Gallium arsenide	Chip (Die) 1303-00-0	% of Total Weight	2.36
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive; mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the). ed via internal design contr chemical substance is NO	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device	and, to the I	best of Microc	chip	0.13		, , ,		2.36
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive; mpliance with the above EU Directives has been verifie i chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulatory Iding compounds used by Microchip meet the UL94 VO). cd via internal design controlled via internal design controlled in NO edate of this document, the concern for any regulator of the machine in the concern for any regulator of the machine in the concern for any regulator of the machine in the concern for any regulator of the concern for any r	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable	and, to the less impurity co	best of Microconcentration o	chip of the chemical		Gallium arsenide	1303-00-0 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemi). d via internal design controlled via internal design controlled in NO e date of this document, the concern for any regulator of flammability standard for icals/plastics/	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of database.	and, to the less impurity co	best of Microconcentration of a test report	chip of the chemical at	0.13		1303-00-0	100	0.72
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive; mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bestance, if any, is not below the threshold of regulatory Iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is sh). d via internal design controlled via internal design controlled in NO e date of this document, the concern for any regulator of flammability standard for icals/plastics/	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide.	and, to the less impurity co	best of Microconcentration of a test report	chip of the chemical at		Gallium arsenide	1303-00-0 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the bestance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemi e protective "tubes" in which the specific product is she did certain "reels" may be made from PVC plastic.). ed via internal design controlled via internal design controlled via the controlled via the concern for any regulator of flammability standard for icals/plastics/ ipped are made from poly	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of database.	and, to the less and, to the less to obtain to hold the p	best of Microconcentration of a test report	chip of the chemical at n the outer box		Gallium arsenide (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bestance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemi e protective "tubes" in which the specific product is shd certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informat vices in their original packing materials is true and corrarantee the completeness and accuracy of data in this ippliers. Supplier information is often protected from beginners.	obdivision of the second of th	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used	and, to the I impurity co ses to obtain to hold the p gy Incorpora chip Techno ty Data Shee ubcontract a oxic metals o	a test report ated's semico logy Incorporates provided by issemblers and	chip of the chemical at n the outer box onductor rated cannot y raw material nd raw material		Gallium arsenide (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bestance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemie protective "tubes" in which the specific product is she did certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and corrarantee the completeness and accuracy of data in this pipilers. Supplier information is often protected from dippliers. Information is provided only as estimates of the timates do not include trace levels of dopants, metals, accrochip Technology Incorporated does not provide any	obdivision of the second of th	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technologied and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe and some information may not have been provided by sparts and the average weight of anticipated significant to	and, to the I impurity co ses to obtain to hold the p gy Incorpora chip Techno ty Data Sheei ubcontract a oxic metals of d parts.	a test report ated's semico logy Incorpor ts provided by semplers arcomponents.	chip of the chemical at n the outer box onductor rated cannot y raw material d raw material These mited product		Gallium arsenide (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, impliance with the above EU Directives has been verified chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the statuce, if any, is not below the threshold of regulatory iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemile protective "tubes" in which the specific product is shed certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informatives in their original packing materials is true and contamente the completeness and accuracy of data in this poliers. Supplier information is often protected from the option of the protected from the protected from the option of the protected from the protected from the option of the protected from th	ob via internal design controlled via internal design controlled via internal design controlled via date of this document, the concern for any regulator of flammability standard for icals/plastics/ slipped are made from polytion in this form concerning rect to the best of its known form because it has been of sclosure as trade secrets a eaverage weight of these and non-metal materials of the warranty, express or impled and its subsidiaries are and invoices.	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable y scheme world-wide. plastics. You can access the UL iQTM family of database vinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technolol ledge and belief, as of the date listed in this form. Microcompiled based on the ranges provided in Material Safe and some information may not have been provided by sparts and the average weight of anticipated significant tontained within silicon devices (silicon IC) in the finishe lied, with respect to the information provided in this decided, with respect to the information provided in this decided.	and, to the less impurity consess to obtain to hold the pagy Incorporachip Technology Data Sheel ubcontract a oxic metals of parts.	a test report acking slip of ated's semico alogy Incorpor ts provided by assemblers an accomponents.	chip of the chemical at In the outer box onductor rated cannot y raw material nd raw material These mited product ded in	0.04	Gallium arsenide (mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00	0.72

XX8E 08 X2SON 7:20 PM : 8/8/2012

Halogen-Free Compliant to IEC 61249-2-21:2003

MICROCHIP Semiconductor Device Type	: TL 36 (Lead) VTLA 5x5x0.9mm (7S)		ation Base Aloper Alloy (Cu				ogeneous Materials: .g. pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e4
		"Contained In"	% Total					1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	117.71	(mg) Total	Mold Compound	% ot Total Weight	t 79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	100.049	678,300		Silica, vitreous (or fused)	60676-86-0	85.00]
Epoxy Resin	Trade Secret	Mold Compound	6.943	10.240	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	7.062	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.353	2,394		Carbon Black	1333-86-4	0.30]
Copper	7440-50-8	Lead Frame	10.217	15.069	102,165			Total	100.00	
Iron	7439-89-6	Lead Frame	0.242	0.356	2,415	15.49	(mg) Total	Lead Frame	% of Total Weight	10.5
Phosphorous	7723-14-0	Lead Frame	0.026	0.039	263		Copper	7440-50-8	97.30	
Zinc (Metal) Silver (Ag)	7440-44-0 7440-22-4	Lead Frame Die Attach	0.016 0.589	0.023 0.868	158 5.888		Iron	7439-89-6 7723-14-0	2.30 0.25	-
		Die Attach Die Attach	0.589	0.868	1,388		Phosphorous Zinc (Metal)	7723-14-0 7440-44-0	0.25	
Proprietary Resin	Trade Secret Trade Secret	Die Attach	0.139	0.205	225		Zinc (Metal)	7440-44-0 Total	100.00	1
Proprietary Curing agent & Hardener Silicon	7440-21-3	Chip (Die)	7.500	11.063	75,000		()= ()			
Gold	7440-21-3	Wire Bond	0.200	0.295	2.000	1.11	(mg) Total	Die Attach 7440-22-4	% of Total Weight	t 0.75
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.659	11.250		Silver (Ag) Proprietary Resin	Trade Secret	79 19	1
Palladium	7440-02-0	Plating on external leads (pins) / annealed at 150 °C for 1 hour	0.063	0.092	625	Proprietan	/ Curing agent & Hardener	Trade Secret	3	1
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150 °C for 1 hour	0.063	0.092	625	riopricial	Curing agent a naracher	Total	100.00	1
30.0	1110010	TOTALS:	100.000	147.500	1,000,000	11.06	Total (mg)	Chip (Die)	% of Total Weight	
	0 1475	g Total Mass			.,000,000	11.00	Doped Silicon	7440-21-3	100	1
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in				•		0.30	(mg) Total	Wire Bond	% of Total Weight	t 0.2
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	of this document, to ory concern for ar	there is no credible reason to believe that the unavoidably regulatory scheme world-wide.	le impurity co	ncentration of	the		Doped Gold	7440-57-5	100	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl		or plastics. You can access the UL IQTM family of databa	ases to obtain	a test report a	it			Total	100.00	
The protective "tubes" in which the specific product is shipped abox and certain "reels" may be made from PVC plastic.	are made from pol	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer	1.84	(mg) Total	Plating on external leads (pins) / annealed at 150°C for 1 hour	% of Total Weight	t 1.25
Microchip Technology Incorporated believes the information in t	his form concerni	ng substances restricted by RoHS in Microchip Technol			ľ					1
devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate. These estimates do not include trace levels of dopants, metals, a	the best of its kno ecause it has been disclosure as trad s of the average w	wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate	ochip Technol ety Data Sheets vided by subco ed significant to	ogy Incorpora s provided by ontract assem oxic metals co	ated cannot raw blers and		Nickel	7440-02-0	90.00	
guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate	the best of its kno ocause it has been disclosure as trad s of the average w and non-metal ma hty, express or im ted and its subsic	wiedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the plied, with respect to the information provided in this de	rochip Technol ety Data Sheets vided by subco ed significant to e finished parts eclaration. The	ogy Incorpora s provided by ontract assem oxic metals co s. exclusive, lim	ated cannot raw blers and omponents.		Nickel Palladium	7440-02-0 7440-05-03	90.00	

TL 36 VTLA 7:20 PM: 8/8/2012

100.000

147.500

Halogen-Free Compliant to IEC 61249-2-21:2003

Semiconductor Device) VTLA 6x6x0.9mm (6S)	Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Markin and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	ī
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47.880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.217	18.134	102,165		Garbon Black	Total	100.00	<u>J</u>
Iron	7439-89-6	Lead Frame	0.242	0.429	2,415	18.64	(mg) Total	Lead Frame	% of Total Weight	10.5
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263	10.04	Copper	7440-50-8	97.30	10.5
Zinc (Metal)	7440-44-0	Lead Frame	0.026	0.028	158		Iron	7440-50-8	2.30	
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5,888		Phosphorous	7723-14-0	0.25	
Proprietary Resin	Trade Secret	Die Attach	0.569	0.246	1,388		Zinc (Metal)	7723-14-0	0.25	
1,		Die Attach		0.246	225		Zinc (wetai)	7440-44-0 Total	0.15 100.00	l
Proprietary Curing agent & Hardener	Trade Secret		0.023							
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000	1.33	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.355	2,000		Silver (Ag)	7440-22-4	79	
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11,250		Proprietary Resin	Trade Secret	19	
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625	Proprietar	y Curing agent & Hardener	Trade Secret	3	
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625			Total	100.00	
		TOTALS:	100.000	177.500	1,000,000	13.31	Total (mg)	Chip (Die)	% of Total Weight	7.5
	0.1775	g Total Mass					Doped Silicon	7440-21-3	100	
, , , ,		trols, supplier declarations, and /or analytical test data.	•	t Directive) and	d with EU	0.36	(mg) Total	Total Wire Bond	100.00	
ce with the above EU Directives has been verified cal substance is absent from the list above, the c	via internal design con hemical substance is N	OT an intentional ingredient in the semiconductor device	ce and, to the b	est of Microck	nip	0.36	(mg) Total	Wire Bond	% of Total Weight	
ce with the above EU Directives has been verified cal substance is absent from the list above, the c gy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of re	via internal design con hemical substance is No date of this document, t egulatory concern for an	OT an intentional ingredient in the semiconductor device the semiconductor device is no credible reason to believe that the unavoidate y regulatory scheme world-wide.	ce and, to the b	pest of Microch	nip the	0.36	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.2
ce with the above EU Directives has been verified cal substance is absent from the list above, the c gy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of re ompounds used by Microchip meet the UL94 V0 f	via internal design con hemical substance is N date of this document, t gulatory concern for an	OT an intentional ingredient in the semiconductor device the semiconductor devices the semiconductor	ce and, to the b	pest of Microch	nip the	0.36		Wire Bond	% of Total Weight	0.2
ical substance is absent from the list above, the c gy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of re compounds used by Microchip meet the UL94 V0 f om/global/eng/pages/offerings/industries/chemic	via internal design con hemical substance is Ni date of this document, t sgulatory concern for an lammability standard fo als/plastics/	OT an intentional ingredient in the semiconductor device the semiconductor device is no credible reason to believe that the unavoidate y regulatory scheme world-wide.	ce and, to the kole impurity co	pest of Microch ncentration of a test report a	nip the t	2.22		Wire Bond 7440-57-5	% of Total Weight	0.2
ce with the above EU Directives has been verified cal substance is absent from the list above, the call substance is absent from the list above, the call substance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of the thr	via internal design con hemical substance is Ni date of this document, t gulatory concern for an ilammability standard for als/plastics/ opped are made from polon in this form concernict to the best of its known because it has been from disclosure as tradimates of the average w	OT an intentional ingredient in the semiconductor devidence is no credible reason to believe that the unavoidably regulatory scheme world-wide. For plastics. You can access the UL iQTM family of datable in the control of the contr	ce and, to the belie impurity co ases to obtain d to hold the percentification of the rochip Techno ety Data Sheet wided by subced significant to	pest of Microck ncentration of a test report a acking slip on ated's semicor logy Incorpora s provided by ontract assem	t t the outer ductor ated cannot raw blers and		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) / annealed at 150°C	% of Total Weight 100	0.2
ce with the above EU Directives has been verified cal substance is absent from the list above, the cal substance is absent from the list above, the cal substance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance, if any, is not below the threshold of resubstance in the substance in the UL94 V0 from/global/eng/pages/offerings/industries/chemicative "tubes" in which the specific product is shipertain "reels" may be made from PVC plastic. Technology Incorporated believes the information their original packing materials is true and corrected also suppliers. Supplier information is often protected in al suppliers. Information is provided only as estimates do not include trace levels of dopants, me Technology Incorporated does not provide any varranties provided by Microchip Technology Incorporated provided in the control of the provided only according to the control of the control o	via internal design con hemical substance is Ni date of this document, t gulatory concern for an ilammability standard fo als/plastics/ opped are made from polon in this form concernict to the best of its known because it has been from disclosure as tradimates of the average we tals, and non-metal mat warranty, express or improprated and its subside	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidate y regulatory scheme world-wide. OF plastics. You can access the UL iQTM family of datable yields of the plastics. "Window envelopes" used the plastic of the pla	ce and, to the belie impurity co ases to obtain d to hold the perception of the perc	pest of Microck ncentration of a test report a acking slip on ted's semicor logy Incorpora s provided by ontract assem oxic metals cos.	t the outer ductor ated cannot raw bilers and omponents.		Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight	0.2
ce with the above EU Directives has been verified ical substance is absent from the list above, the c gy Incorporated's knowledge and belief as of the substance, if any, is not below the threshold of resompounds used by Microchip meet the UL94 V0 fom/global/eng/pages/offerings/industries/chemic ctive "tubes" in which the specific product is shipertain "reels" may be made from PVC plastic. Technology Incorporated believes the information their original packing materials is true and correct their original packing materials is true and correct their original packing materials is true and correctivation in their original packing materials is true and correctivation in their original packing materials is often protected in suppliers. Information is provided only as estimates do not include trace levels of dopants, me arranties provided by Microchip Technology Incorporated does not provide any varranties provided by Microchip Technology Incorpir's quotations, sales order acknowledgement, and disclaims any duty to notify users of updates or	via internal design con hemical substance is Ni date of this document, t gulatory concern for an ilammability standard for als/plastics/ oped are made from polon in this form concernict to the best of its known because it has been from disclosure as tradimates of the average witals, and non-metal mat warranty, express or improporated and its subsiding invoices. Changes to Material Corhe users' reliance on the	OT an intentional ingredient in the semiconductor devices is no credible reason to believe that the unavoidal by regulatory scheme world-wide. OF plastics. You can access the UL iQTM family of database of plastics. You can access the UL iQTM family of database of the control	ce and, to the to the impurity co asses to obtain the dot ohold the plogy Incorporatoring Techno fety Data Sheet wided by subced significant the conditions of the conditions of the significant the	pest of Microck ncentration of a test report a acking slip on ted's semicor logy incorpors s provided by ontract assem oxic metals co s. exclusive, lim sale. These ar	t the outer ductor ated cannot raw blers and amponents.		Doped Gold (mg) Total Nickel	Wire Bond 7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour 7440-02-0	% of Total Weight 100 100.00 % of Total Weight 90.00	0.2

TL 44 VTLA 7:21 PM : 8/8/2012

Halogen-Free Compliant to IEC 61249-2-21:2003

AICROCHIP Semiconductor Device T	.i) VTLA 9x9x0.9mm (8S)	Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	I
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.217	18,134	102.165			Total	100.00	y
Iron	7439-89-6	Lead Frame	0.242	0.429	2.415	18.64	(mg) Total	Lead Frame	% of Total Weight	10.5
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263	10.04	Copper	7440-50-8	97.30	10.5
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158		Iron	7439-89-6	2.30	
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5,888		Phosphorous	7723-14-0	0.25	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1,388		Zinc (Metal)	7440-44-0	0.15	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225		Zillo (Motal)	Total	100.00	U
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000	1.33	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.355	2.000	1.33	Silver (Ag)	7440-22-4	79	0.75
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11.250		Proprietary Resin	7440-22-4 Trade Secret	19	
Palladium	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625	Proprieto	ary Curing agent & Hardener	Trade Secret	19	
Gold	7440-57-5	. ,	0.063	0.111	625	Fiophela	Curing agent & Hardener	Total	100.00	<u>J</u>
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour TOTALS:	100.000	177.500	1,000,000	13.31	Total (mg)	Chip (Die)	% of Total Weight	7.5
			100.000	177.500	1,000,000	13.31				7.3
		g Total Mass					Doped Silicon	7440-21-3	100	
s semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directiv	e 2002/95/EC (ROHS Directive), EU Directive 2011/65/EC	J (ROHS Recast	Directive) an	d with EU			Total	100.00	
mpliance with the above EU Directives has been verified	via internal design con	rols, supplier declarations, and /or analytical test data.			ļ	0.36	(mg) Total	Wire Bond	% of Total Weight	0.2
mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the che chology Incorporated's knowledge and belief as of the d mical substance, if any, is not below the threshold of re	nemical substance is NO late of this document, t	OT an intentional ingredient in the semiconductor device	ce and, to the b			0.36	(mg) Total Doped Gold	7440-57-5	100	0.2
chemical substance is absent from the list above, the chehology Incorporated's knowledge and belief as of the d	nemical substance is No late of this document, ti gulatory concern for an lammability standard fo	OT an intentional ingredient in the semiconductor devi- nere is no credible reason to believe that the unavoidal y regulatory scheme world-wide.	ce and, to the b	ncentration of	f the	0.36				0.2
chemical substance is absent from the list above, the ch chnology incorporated's knowledge and belief as of the d mical substance, if any, is not below the threshold of req ding compounds used by Microchip meet the UL94 V0 fl	nemical substance is NO late of this document, ti gulatory concern for an lammability standard fo als/plastics/	or an intentional ingredient in the semiconductor devi- nere is no credible reason to believe that the unavoidal y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of datab	ce and, to the bole impurity con	ncentration of	f the	2.22		7440-57-5	100	
chemical substance is absent from the list above, the chinology incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0 flo://ul.com/global/eng/pages/offerings/industries/chemical	nemical substance is No late of this document, ti gulatory concern for an lammability standard fo als/plastics/ oped are made from poly in in this form concernic to the best of its knov rm because it has been from disclosure as trade mates of the average we	of an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidal y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databer in the control of the control	ce and, to the bole impurity colors asset to obtain and to hold the particular to chip Technol fety Data Sheet vided by subcoded significant to	a test report a acking slip on ted's semicor logy Incorpora s provided by pontract assem oxic metals co	the outer inductor ated cannot raw blers and		Doped Gold	7440-57-5 Total Plating on external leads (pins) / annealed at 150°C	100.00	
chemical substance is absent from the list above, the chinology incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of rediding compounds used by Microchip meet the UL94 V0 flo://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information ices in their original packing materials is true and correct trantee the completeness and accuracy of data in this for theiral suppliers. Supplier information is often protected for material suppliers. Information is provided only as estit	nemical substance is No late of this document, the gulatory concern for an ammability standard for als/plastics/ sped are made from poly in in this form concernite to the best of its known because it has been from disclosure as trademates of the average we tals, and non-metal mat varranty, express or improprotated and its subsidiates.	or an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidal y regulatory scheme world-wide. It plastics. You can access the UL iQTM family of databelian control of the proving c	ce and, to the bolle impurity collasses to obtain and to hold the particular to the particular to the particular to the finished particular to the finished particular to the calcular to the particular to the pa	a test report a acking slip on ted's semicor logy Incorpors s provided by portract asser- oxic metals cos.	the outer the outer adductor ated cannot raw tollers and omponents.		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour	100.00 100.00 % of Total Weight	
chemical substance is absent from the list above, the chinology incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 flo://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information ices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for terial suppliers. Supplier information is often protected for material suppliers. Supplier information is provided only as estimates estimates do not include trace levels of dopants, met rochip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated does not provide and the provided by Microchip Technology Incorporated does not provide and the provided by Microchip Technology Incorporated does not provide and the provided by Microchip Technology Incorporated does not provide and the provided by Microchip Technology Incorporated does not provide and the provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does no	nemical substance is No late of this document, the gulatory concern for an ammability standard for als/plastics/ upped are made from poly in in this form concerning to the best of its known to because it has been from disclosure as trademates of the average we talls, and non-metal mat varranty, express or improrated and its subsided invoices. Changes to Material Cone users' reliance on the	or an intentional ingredient in the semiconductor devicere is no credible reason to believe that the unavoidal pregulatory scheme world-wide. It plastics. You can access the UL iQTM family of databer in the properties of the properties of the properties of the date listed in this form. Microchip Technor will be a secrets and some information may not have been progish of the parts and the average weight of anticipate in this contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this daries are contained in Microchip's standard terms and tent Declarations and shall not be liable for any damageten.	ce and, to the bole impurity collaboration asses to obtain a do hold the particular to the particular to the particular to the finished particular to the conditions of some soft of the particular to the finished particular to the finished particular to the finished particular to the particular to th	a test report a acking slip on ted's semicor logy Incorpor, s provided by ontract assem oxic metals co s. exclusive, lim sale. These ar direct, consec	the outer ductor ated cannot raw blers and omponents. hited e provided		Doped Gold (mg) Total Nickel	7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour 7440-02-0	100 100.00 % of Total Weight 90.00	

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100.00

MICROCHIP Semiconductor Device Type:	B1KE 48 TFBG	A 8x10x1.2mm (9T)		ination Base opper Alloy (8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e1
		"Contained In"	% Total			71.63	(mg) Total	Mold Compound	% ot Total Weight	50.3
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	71.00		•	·	1
FUSED SILICA	60676-86-0	Mold Compound	38.981	55.509	389,810		FUSED SILICA EPOXY RESINS,	60676-86-0	77.50	
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	6.984	49,048		CURED	Trade Secret	9.75	
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	6.984	49,048		HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.791	12,580		CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK Copper	1333-86-4 7440-50-8	Mold Compound Lead Frame	0.252 8.052	0.358 11.467	2,515 80.524		CARBON BLACK	1333-86-4	0.50 100.00]
Glass fibers	65997-17-3	Lead Frame	4.800	6.835	48,000	31.94	(mg) Total	Total Lead Frame	% of Total Weight	22.43
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	6.835	48,000	01.01	Copper	7440-50-8	35.90	22.70
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	2.555	17,944		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.875	1.246	8,748		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.561	0.799	5,608		Silica, chemically			
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.639	4,486		prepared Nickel	7631-86-9 7440-02-0	8.00 3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.639	4,486		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.256	1,794		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.336	0.479	3,365		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.160	1,122		(2- Methoxymethylethoxy)pr opanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.022	0.032	224		Misc.	system	1.50	
Silver	7440-22-4	Die Attach	0.552	0.786	5,520		Aluminium-hydroxide- oxide	24623-77-6	0.50	
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	0.138	0.197	1.380		Gold	7440-57-5	0.50	
Silicon	7440-21-3	Chip (Die)	7.650	10.894	76,500		Ocid	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.860	1.225	8,600	0.98	(mg) Total	Die Attach	% of Total Weight	0.69
Tin	7440-31-5	Plating on external leads (pins)	17.257	24.574	172,569		Silver	7440-22-4	80.00	
Silver	7440-22-4	Plating on external leads (pins)	0.723	1.029	7,228		Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	20.00	
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.129	904			Total	100.00	-
	0.4404 ··· T	TOTALS	3: 100.000	142.400	1,000,000	10.89	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	7.65
	0.1424 g To						Doped Silicon	7440-21-3 Total	100	
This semiconductor device and its homogenous materials comply wi 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	h EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (Rol	IS Recast Direc	tive) and with	EU Directive			Total	100.00	
Compliance with the above EU Directives has been verified via intern	al design controls, supp	lier declarations, and /or analytical test data.				1.22	(mg) Total	Wire Bond	% of Total Weight	0.86
If a chemical substance is absent from the list above, the chemical su Incorporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulatory so	there is no credible reas						Doped Gold	7440-57-5	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammabili http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics		You can access the UL iQTM family of databases	to obtain a test	report at				Total	100.00	'
								Plating on external		
The protective "tubes" in which the specific product is shipped are m certain "reels" may be made from PVC plastic.	ade from polyvinyl chlo	ride (PVC) plastic. "Window envelopes" used to h	old the packing	slip on the o	uter box and	25.73	(mg) Total	leads (pins)	% of Total Weight	18.07
The protective "tubes" in which the specific product is shipped are m	orm concerning substar nowledge and belief, as - ompiled based on the ra ome information may no he average weight of an	nces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technolo anges provided in Material Safety Data Sheets pro ti have been provided by subcontract assemblers ticipated significant t	Incorporated's gy Incorporate vided by raw m and raw materi	semiconducto d cannot guar aterial supplical suppliers. It	or devices in antee the ers. Supplier nformation is	25.73	(mg) Total		% of Total Weight	18.07
The protective "tubes" in which the specific product is shipped are more train "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this fether original packing materials is true and correct to the best of its known pleteness and accuracy of data in this form because it has been conformation is often protected from disclosure as trade secrets and so provided only as estimates of the average weight of these parts and the	orm concerning substar nowledge and belief, as ompiled based on the ra- ome information may no he average weight of and devices (silicon IC) in the xpress or implied, with	nces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technolog anges provided in Material Safety Data Sheets pro thave been provided by subcontract assemblers ticipated significant toxic metals components. The efinished parts. respect to the information provided in this declaration.	Incorporated's gy Incorporate vided by raw m and raw materi ase estimates d ation. The exclu	semiconducto d cannot guar aterial supplical al suppliers. li o not include sive, limited p	or devices in antee the ers. Supplier nformation is trace levels	25.73		leads (pins)		18.07
The protective "tubes" in which the specific product is shipped are more train "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its known pleteness and accuracy of data in this form because it has been conformation is often protected from disclosure as trade secrets and so provided only as estimates of the average weight of these parts and the following place in the parts and the parts are the parts	orm concerning substar nowledge and belief, as ompiled based on the re me information may no he average weight of an devices (silicon IC) in the xpress or implied, with ubsidiaries are containe	nces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the weak of the	Incorporated's gy Incorporate vided by raw m and raw materi see estimates d attion. The exclusiale. These are	semiconductt d cannot guar aterial suppli al suppliers. II o not include sive, limited p provided in I	or devices in antee the ers. Supplier information is trace levels oroduct Microchip's	25.73	Tin	leads (pins) 7440-31-5	95.50	18.07

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Compliant to IEC 61249-2-21:2003

MICROCHIP	DOME 40 TED			ination Base opper Alloy (•			ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
Semiconductor Device Type:	B3KE 48 IFB									Ç.
		"Contained In"	% Total			47.33	(mg) Total	Mold Compound	% ot Total Weight	50.3
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	-11.00	, ,,			
FUSED SILICA	60676-86-0	Mold Compound	38.981	36.681	389,810		FUSED SILICA EPOXY RESINS, CURED	60676-86-0 Trade Secret	77.50 9.75	
EPOXY RESINS, CURED HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret Trade Secret	Mold Compound Mold Compound	4.905 4.905	4.615 4.615	49,048 49,048	MOLEOUILAD E	EPOXY RESINS, CORED	Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.184	12,580	WOLECOLAR E	CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.237	2.515		CARBON BLACK	1333-86-4	0.50	1
Copper	7440-50-8	Lead Frame	8.052	7.577	80.524			Total	100.00	<u>4</u>
Glass fibers	65997-17-3	Lead Frame	4.800	4.517	48,000	21.11	(mg) Total	Lead Frame	% of Total Weight	22.43
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	4.517	48,000	2	Copper	7440-50-8	35.90	1
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	1.689	17,944		Glass fibers	65997-17-3	21.40	1
Nickel	7440-02-0	Lead Frame	0.875	0.823	8,748		Phenol, polymer	9003-36-5	21.40	1
Barite	7727-43-7	Lead Frame	0.561	0.528	5,608		Silica, chemically prepared	7631-86-9	8.00	1
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.422	4,486		Nickel	7440-02-0	3.90]
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.422	4,486		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.169	1,794		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.336	0.317	3,365		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.106	1,122	(2-Meth	noxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.022	0.021	224		Misc.	system	1.50	
Silver	7440-22-4	Die Attach	0.552 0.138	0.519 0.130	5,520 1,380		Aluminium-hydroxide-oxide	24623-77-6 7440-57-5	0.50	4
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach					Gold		0.10	1
Silicon Doped Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	7.650 0.860	7.199 0.809	76,500 8,600			Total	100.00	
Doped Gold Tin	7440-57-5		17.257	16.239	172,569	0.65	(mg) Total	Die Attach	% of Total Weight	0.69
Silver	7440-31-5	Plating on external leads (pins) Plating on external leads (pins)	0.723	0.680	7,228		Silver Phenolic resin	7440-22-4 26834-02-6	80.00 20.00	#
Copper	7440-52-4	Plating on external leads (pins) Plating on external leads (pins)	0.723	0.085	904		Prienolic resin	20834-02-6 Total	100.00	<u> </u>
Сорреі	7440-50-6	TOTALS		94.100	1,000,000	7.20	(mg) Total	Chip (Die)	% of Total Weight	7.65
	0.0044 T		: 100.000	34.100	1,000,000	7.20				7.65
	0.0941 g T						Doped Silicon	7440-21-3	100	
is semiconductor device and its homogenous materials comply rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 200	2/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recas	t Directive) a	nd with EU	0.81	(mg) Total	Wire Bond	% of Total Weight	0.86
mpliance with the above EU Directives has been verified via inter	nal design controls,	supplier declarations, and /or analytical test data.					Doped Gold	7440-57-5	100.00	
a chemical substance is absent from the list above, the chemical echnology Incorporated's knowledge and belief as of the date of th emical substance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 flammab	nis document, there i concern for any regu	s no credible reason to believe that the unavoidab ulatory scheme world-wide.	le impurity co	ncentration o	of the			Total	100.00	
tp://ul.com/global/eng/pages/offerings/industries/chemicals/plast		tics. You can access the OL IQTM family of databa	ases to obtain	a test report	at	17.00	(mg) Total	Plating on external leads (pins)	% of Total Weight	18.07
ne protective "tubes" in which the specific product is shipped are ox and certain "reels" may be made from PVC plastic.	made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used	I to hold the p	acking slip o	n the outer		Tin	7440-31-5	95.50	
icrochip Technology Incorporated believes the information in this evices in their original packing materials is true and correct to the uarantee the completeness and accuracy of data in this form beca aterial suppliers. Supplier information is often protected from dis w material suppliers. Information is provided only as estimates of nese estimates do not include trace levels of dopants, metals, and	best of its knowledguse it has been comp closure as trade secr f the average weight	e and belief, as of the date listed in this form. Micr illed based on the ranges provided in Material Saf ets and some information may not have been pro of these parts and the average weight of anticipate	ochip Techno ety Data Sheet vided by subc ed significant t	logy Incorpor s provided by ontract assen oxic metals o	rated cannot y raw nblers and		Silver	7440-22-4	4.00	
icrochip Technology Incorporated does not provide any warranty, roduct warranties provided by Microchip Technology Incorporatec I Microchip's quotations, sales order acknowledgement, and invol	l and its subsidiaries						Copper	7440-50-8	0.50	
flicrochip disclaims any duty to notify users of updates or changes therwise, suffered by users or third parties as a result of the users SGS) or of this Certificate of Compliance for semiconductor produ	reliance on the info							Total	100.00	-

B3KE 48 TFBGA 7:21 PM : 8/8/2012

Semiconductor Device Type: MAQE 48 WFBGA 4x6x0.8mm (3T) "Contained In"				nination Base Copper Alloy (•	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Markin and/or Pkg. Labeling e1
			% Total	Ι		14.50	(mg) Total	Mold Compound	% ot Total Weight	50.51
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•	·	
FUSED SILICA EPOXY RESINS, CURED	60676-86-0	Mold Compound	39.144	11.234	391,437	4	FUSED SILICA EPOXY RESINS, CURED	60676-86-0 Trade Secret	77.50 9.75	
HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret Trade Secret	Mold Compound Mold Compound	4.925 4.925	1.414 1.414	49,252 49,252	HIGH MOLECULAR EPOXY		Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1,263	0.363	12.633	THOT MOLECULAR ET OXT	CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK	1333-86-4	Mold Compound	0.253	0.072	2,526		CARBON BLACK	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	8.616	2.473	86,160	1		Total		J.
Glass fibers	65997-17-3	Lead Frame	5.136	1.474	51,360	6.89	(mg) Total	Lead Frame	% of Total Weight	24
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	5.136	1.474	51,360		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	1.920	0.551	19,200		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.936	0.269	9,360	Phenol, formaldehyde, (ch	nloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.600	0.172	6,000	1	Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.480	0.138	4,800		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.480	0.138	4,800		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.192	0.055	1,920		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.360	0.103	3,600		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.120	0.034	1,200	(2-Met	hoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.024	0.007	240		Misc.	system	1.50	
Solid Epoxy Resin	Trade Secret	Die Attach	0.020	0.006	195		Aluminium-hydroxide-oxide	24623-77-6	0.50	
Phenol Resin	Trade Secret	Die Attach	0.020	0.006	195		Gold	7440-57-5	0.10	
Fused Silica	60676-86-0	Die Attach	0.052	0.015	520			Total		
Liquid epoxy resin	Trade Secret	Die Attach	0.020	0.006	195	0.04	(mg) Total	Die Attach	% of Total Weight	0.13
Synthetic Rubber	Trade Secret	Die Attach	0.020	0.006	195		Solid Epoxy Resin	Trade Secret	15.00	
Silicon	7440-21-3	Chip (Die)	5.980	1.716	59,800		Phenol Resin	Trade Secret	15.00	
Doped Gold	7440-57-5	Wire Bond	1.870	0.537	18,700		Fused Silica	60676-86-0	40.00	
Tin	7440-31-5	Plating on external leads (pins)	16.722	4.799	167,221		Liquid epoxy resin	Trade Secret	15.00	
Silver	7440-22-4	Plating on external leads (pins)	0.700	0.201	7,004		Synthetic Rubber	Trade Secret	15	
Copper	7440-50-8	Plating on external leads (pins)	0.088	0.025	876			Total	100.00	
		тот	ALS: 100.000	28.700	1,000,000	1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98
	0.0287 g To	otal Mass					Doped Silicon	7440-21-3	100	
s semiconductor device and its homogenous materials comply wit 12/53/EC (End-of-Life Vehicles (ELV) Directive).	th EU Directive 2002/95/EC	(RoHS Directive), EU Directive 2011/65/EU (Roh	IS Recast Directiv	re) and with EU	Directive	0.54	(mg) Total	Wire Bond	% of Total Weight	1.87
npliance with the above EU Directives has been verified via intern	nal design controls, suppli	er declarations, and /or analytical test data.					Doped Gold	7440-57-5	100.00	
chemical substance is absent from the list above, the chemical st orporated's knowledge and belief as of the date of this document, t below the threshold of regulatory concern for any regulatory sche	there is no credible reason							Total	100.00	
olding compounds used by Microchip meet the UL94 V0 flammabilit p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics		u can access the UL iQTM family of databases to	o obtain a test repo	ort at		5.03	(mg) Total	Plating on external leads (pins)	% of Total Weight	17.51
protective "tubes" in which the specific product is shipped are n tain "reels" may be made from PVC plastic.	nade from polyvinyl chloric	le (PVC) plastic. "Window envelopes" used to ho	old the packing sli	p on the outer	box and		Tin	7440-31-5	95.50	
rochip Technology Incorporated believes the information in this figural packing materials is true and correct to the best of its knowle accuracy of data in this form because it has been compiled base tected from disclosure as trade secrets and some information may mates of the average weight of these parts and the average weight-metal materials contained within silicon devices (silicon IC) in th	edge and belief, as of the d d on the ranges provided i y not have been provided I ht of anticipated significant	ate listed in this form. Microchip Technology Inc n Material Safety Data Sheets provided by raw m by subcontract assemblers and raw material sup	orporated cannot aterial suppliers. pliers. Information	guarantee the Supplier inforn is provided on	completeness nation is often nly as		Silver	7440-22-4	4.00	
crochip Technology Incorporated does not provide any warranty, e ovided by Microchip Technology Incorporated and its subsidiaries der acknowledgement, and invoices.							Copper	7440-50-8	0.50	
rochip disclaims any duty to notify users of updates or changes to	- Matarial Carrier David	dans and shall not be light to the control of			-4b			Total	100.00	

28.70 100.00

MAQE 48 WFBGA 7:21 PM : 8/8/2012

Compliant to IEC 61249-2-21:2003

Semiconductor Device Type: BG 121 (Lead) TFBGA 10x10x1 (2X)				ation Base oper Alloy (0		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg Labeling
Semiconductor Device Type:	BG 121 (Lea	"Contained In"	% Total	1				Mold Compound /	%ot Total	e1
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	107.44	(mg) Total	Halogen-Free	Weight	55.84
fused silica	60676-86-0	Mold Compound / Halogen-Free	47.464	91.321	474,640		fused silica	60676-86-0	85.00	
solid epoxy resin	25068-38-6	Mold Compound / Halogen-Free	3.909	7.521	39,088		solid epoxy resin	25068-38-6	7.00	
phenol resin Metal Hudroxide	108-95-2 14808-60-7	Mold Compound / Halogen-Free Mold Compound / Halogen-Free	3.630 0.558	6.983 1.074	36,296 5,584		phenol resin Metal Hudroxide	108-95-2 14808-60-7	6.50 1.00	
Carbon black	1333-86-4	Mold Compound / Halogen-Free	0.556	0.537	2,792		Carbon black	1333-86-4	0.50	
Copper	7440-50-8	Substrate + Solder Mask (AUS308)Halogen-Free	7.762	14.933	77,616		Garbarr black	Total	100.00	ll .
Glass fibers	65997-17-3	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267	41.60	(mg) Total	Substrate + Solder Mask (AUS308) Halogen-Free	% of Total Weight	21.62
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17,296		Glass fibers Phenol, formaldehyde,	65997-17-3	21.40	
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8,432		(chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040	5,405		Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.173	0.333	1,730		Magnesium silicate	14807-96-6	2.00	
Misc.	system 24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624 0.208	3,243 1,081		Araldite GY 250 (2-Methoxymethylethoxy)propanol	25068-38-6 34590-94-8	2.00 0.80	
Aluminium-hydroxide-oxide Gold	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free Substrate + Solder Mask (AUS308)Halogen-Free	0.108	0.208	216		(2-Methoxymethylethoxy)propanol Misc.	34590-94-8 system	1.50	
Silver (Ag)	7440-22-4	Die Attach	0.550	1.059	5,502		Aluminium-hydroxide-oxide	24623-77-6	0.50	
Diester Resin	Trade Secret	Die Attach	0.138	0.265	1,376		Gold	7440-57-5	0.10	
Acrlate Resin	Trade Secret	Die Attach	0.052	0.099	516			Total	100.00	
						1.46	(mg) Total		% of Total	0.76
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206	1.40		Die Attach	Weight	0.70
For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	Chip (Die)	7.940	15.277	79,400		Silver (Ag)	7440-22-4	72	
Tin (Sn) Silver (Ag)	7440-31-5 7440-22-4	Solder Ball (SAC405) Solder Ball (SAC405)	12.224 0.512	23.519 0.985	122,240 5,120		Diester Resin Acrlate Resin	Trade Secret	18 7	
Copper (Cu)	7440-50-8	Solder Ball (SAC405)	0.064	0.965	640		Polymeric Resin	Trade Secret Trade Secret	3	
Gold (Au)	7440-57-5	Bond Wire	1.030	1.981	10.296.00		1 Olymene Resin	Total	100.00	
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00	15.28	Total (mg)	Chip (Die)	% of Total Weight	7.94
		TOTALS:			1,000,000		For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	100	
	0.1924	g Total Mass	100.000	192.400	1,000,000		onour produted to be all subort	Total	100.00	
nis semiconductor device and its homogenous materials comply ith EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/	/EU (RoHS Re	cast Directiv	e) and	24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	12.80
ompliance with the above EU Directives has been verified via inte	rnal design contr	ols, supplier declarations, and /or analytical test da							=	
			ita.				Tin (Cn)	7440 24 5	05.50	
							Tin (Sn)	7440-31-5	95.50	
a chemical substance is absent from the list above, the chemical schnology Incorporated's knowledge and belief as of the date of t nemical substance, if any, is not below the threshold of regulator	his document, th	ere is no credible reason to believe that the unavoid	evice and, to t				Tin (Sn) Silver (Ag)			
echnology Incorporated's knowledge and belief as of the date of t	his document, th concern for any illity standard for	ere is no credible reason to believe that the unavoid regulatory scheme world-wide.	evice and, to t dable impurit	y concentrati	on of the		, ,	7440-31-5 7440-22-4 7440-50-8	95.50 4.00	
echnology Incorporated's knowledge and belief as of the date of t nemical substance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V0 flammak	his document, th	ere is no credible reason to believe that the unavoic regulatory scheme world-wide. plastics. You can access the UL iQTM family of dat	evice and, to t dable impurit	y concentrati ain a test rep	on of the		Silver (Ag)	7440-22-4	4.00	
echnology Incorporated's knowledge and belief as of the date of t nemical substance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V0 flammak tp://ul.com/global/eng/pages/offerings/industries/chemicals/plas ne protective "tubes" in which the specific product is shipped are	his document, the concern for any illity standard for cics/ made from poly for concerning document to the accuracy of data cormation is ofter formation is proving any content on the cormation is proving the counter of the content of the cormation is proving the counter of the	ere is no credible reason to believe that the unavoic regulatory scheme world-wide. plastics. You can access the UL iQTM family of dat vinyl chloride (PVC) plastic. "Window envelopes" using substances restricted by RoHS in Microchip Tech best of its knowledge and belief, as of the date liste in this form because it has been compiled based or protected from disclosure as trade secrets and sour vided only as estimates of the average weight of the	evice and, to to dable impurity abases to obtain sed to hold the mology incorred in this form the ranges pure informatic use parts and	y concentration a test repart in a test repart in a test repart in a part in a test repart in a test in a	on of the port at ip on the laterial ave been weight of	2.00	Silver (Ag)	7440-22-4 7440-50-8	4.00	1.04
echnology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulators olding compounds used by Microchip meet the UL94 V0 flammat tp://ul.com/global/eng/pages/offerings/industries/chemicals/plas ne protective "tubes" in which the specific product is shipped are uter box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in this miconductor devices in their original packing materials is true a sechnology Incorporated cannot guarantee the completeness and affety Data Sheets provided by raw material suppliers. Supplier in tovided by subcontract assemblers and raw material suppliers. In ticipated significant toxic metals components. These estimates of	his document, the concern for any illity standard for cics/ made from poly for concerning document to the accuracy of data ormation is ofter formation is provide not include train, express or implied and its subsidial.	ere is no credible reason to believe that the unavoid regulatory scheme world-wide. plastics. You can access the UL iQTM family of dat winyl chloride (PVC) plastic. "Window envelopes" using substances restricted by RoHS in Microchip Tech best of its knowledge and belief, as of the date liste in this form because it has been compiled based or protected from disclosure as trade secrets and so rided only as estimates of the average weight of the ce levels of dopants, metals, and non-metal materiated, with respect to the information provided in this	evice and, to to dable impurity abases to obtain a contained a contained a contained a contained a declaration.	ain a test repare packing sl porated's . Microchip provided in M on may not h the average within silico	on of the cort at ip on the laterial ave been weight of n devices e, limited	2.00	Silver (Ag) Copper (Cu)	7440-22-4 7440-50-8 Total	4.00 0.50 100.00	1.04
echnology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulator; olding compounds used by Microchip meet the UL94 V0 flammattp://ul.com/global/eng/pages/offerings/industries/chemicals/plas are protective "tubes" in which the specific product is shipped are uter box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in this microductor devices in their original packing materials is true a schonology Incorporated cannot guarantee the completeness and afety Data Sheets provided by raw material suppliers. In thicipated significant toxic metals components. These estimates in thicipated significant toxic metals components. These estimates in the finished parts. Icrochip Technology Incorporated does not provide any warranty coduct warranties provided by Microchip Technology Incorporate voided in Microchip's quotations, sales order acknowledgement, icrochip disclaims any duty to notify users of updates or change on sequential or otherwise, suffered by users or third parties as a	his document, the concern for any illity standard for ics/ made from poly form concerning docrect to the accuracy of data ormation is ofter formation is provide not include train, express or implication in the concerning of the concerning to the concerning the	ere is no credible reason to believe that the unavoic regulatory scheme world-wide. plastics. You can access the UL iQTM family of dat winyl chloride (PVC) plastic. "Window envelopes" using substances restricted by RoHS in Microchip Tech best of its knowledge and belief, as of the date liste in this form because it has been compiled based or protected from disclosure as trade secrets and so protected from disclosure as trade as a secret secret in the information provided in this tries are contained in Microchip's standard terms at each Declarations and shall not be liable for any dams s'reliance on the information in Material Content Disclosure as trades and the secret in the se	evice and, to to dable impurity abases to obtained to hold the anology Incorred in this form in the ranges pare informations see parts and als contained as declaration, and conditions ages, direct of able to the second to the	ain a test repaire packing sl porated's . Microchip provided in Non may not hethe average within silico The exclusive of sale. The	on of the port at ip on the laterial ave been weight of n devices e, limited se are	2.00	Silver (Ag) Copper (Cu) (mg) Total	7440-22-4 7440-50-8 Total Bond Wire	4.00 0.50 100.00 % of Total Weight	1.04
chnology Incorporated's knowledge and belief as of the date of temical substance, if any, is not below the threshold of regulator, ilding compounds used by Microchip meet the UL94 V0 flammatp://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped are ter box and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this miconductor devices in their original packing materials is true a chnology Incorporated cannot guarantee the completeness and fety Data Sheets provided by raw material suppliers. Supplier intovided by subcontract assemblers and raw material suppliers. Inticipated significant toxic metals components. These estimates incon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty oduct warranties provided by Microchip Technology Incorporate ovided in Microchip's quotations, sales order acknowledgement, crochip disclaims any duty to notify users of updates or changes.	his document, the concern for any illity standard for ics/ made from poly form concerning docrect to the accuracy of data ormation is ofter formation is provide not include train, express or implication in the concerning of the concerning to the concerning the	ere is no credible reason to believe that the unavoic regulatory scheme world-wide. plastics. You can access the UL iQTM family of dat winyl chloride (PVC) plastic. "Window envelopes" using substances restricted by RoHS in Microchip Tech best of its knowledge and belief, as of the date liste in this form because it has been compiled based or protected from disclosure as trade secrets and so protected from disclosure as trade as a secret secret in the information provided in this tries are contained in Microchip's standard terms at each Declarations and shall not be liable for any dams s'reliance on the information in Material Content Disclosure as trades and the secret in the se	evice and, to to dable impurity abases to obtained to hold the anology Incorred in this form in the ranges pare informations see parts and als contained as declaration, and conditions ages, direct of able to the second to the	ain a test repaire packing sl porated's . Microchip provided in Non may not hethe average within silico The exclusive of sale. The	on of the port at ip on the laterial ave been weight of n devices e, limited se are	2.00	Silver (Ag) Copper (Cu) (mg) Total Gold (Au)	7440-22-4 7440-50-8 Total Bond Wire	4.00 0.50 100.00 % of Total Weight	1.04

BG 121 TFBGA 7:21 PM : 8/8/2012



Semiconductor Device Type: 04 (SAC 105) / WCSP AF/AL										
Basic Substance	CAS Number	mg/part	% Total Weight	ppm						
Tungsten	7440-33-7	0.078	1.551	15,514						
Aluminum	7429-90-5	0.016	0.325	3,249						
Titanium	7440-32-6	0.001	0.014	135						
Arsenic	7440-38-2	1.87E-09	3.74E-08	3.74E-04						
Boron	7440-42-8	2.70E-10	5.40E-09	5.40E-05						
Phosphorous	7723-14-0	3.09E-11	6.19E-10	6.19E-06						
Copper	7440-50-8	1.28E-03	0.026	256						
Polymer	Trade Secret	0.007	0.138	1,377						
Silicon	7440-21-3	4.647	92.947	929,470						
Tin	7440-31-5	0.246	4.925	49,250						
Silver	7440-22-4	0.003	0.050	500						
Copper	7440-50-8	0.001	0.025	250						
	Totals:	5.00	100	1000000						

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Semiconductor Device Type: 05 (SAC 105) / WCSP AG				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.087	1.542	15,423
Aluminum	7429-90-5	0.018	0.323	3,230
Titanium	7440-32-6	0.001	0.013	134
Arsenic	7440-38-2	2.09E-09	3.72E-08	3.72E-04
Boron	7440-42-8	3.02E-10	5.37E-09	5.37E-05
Phosphorous	7723-14-0	3.46E-11	6.15E-10	6.15E-06
Copper	7440-50-8	1.43E-03	0.025	254
Polymer	Trade Secret	0.008	0.137	1,369
Silicon	7440-21-3	5.198	92.403	924,034
Tin	7440-31-5	0.308	5.472	54,722
Silver	7440-22-4	0.003	0.056	556
Copper	7440-50-8	0.002	0.028	278
•	Totals:	5 6250	100	1000000

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Semiconductor Device Type: 08 (SAC 105) / WCSP AC				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.380	1.542	15,423
Aluminum	7429-90-5	0.080	0.323	3,230
Titanium	7440-32-6	0.003	0.013	134
Arsenic	7440-38-2	9.17E-09	3.72E-08	3.72E-04
Boron	7440-42-8	1.32E-09	5.37E-09	5.37E-05
Phosphorous	7723-14-0	1.52E-10	6.15E-10	6.15E-06
Copper	7440-50-8	6.27E-03	0.025	254
Polymer	Trade Secret	0.034	0.137	1,369
Silicon	7440-21-3	22.793	92.403	924,034
Tin	7440-31-5	1.350	5.472	54,722
Silver	7440-22-4	0.014	0.056	556
Copper	7440-50-8	0.007	0.028	278
	Totals:	24.67	100	1000000

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Semiconductor Device Type: 08 (SAC 305) / WCSP FA				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.243	1.542	15,423
Aluminum	7429-90-5	0.051	0.323	3,230
Titanium	7440-32-6	0.002	0.013	134
Arsenic	7440-38-2	5.86E-09	3.72E-08	3.72E-04
Boron	7440-42-8	8.46E-10	5.37E-09	5.37E-05
Phosphorous	7723-14-0	9.70E-11	6.15E-10	6.15E-06
Copper	7440-50-8	4.01E-03	0.025	254
Polymer	Trade Secret	0.022	0.137	1,369
Silicon	7440-21-3	14.570	92.403	924,034
Tin	7440-31-5	0.845	5.361	53,611
Silver	7440-22-4	0.026	0.167	1,667
Copper	7440-50-8	0.004	0.028	278
	Totals	15 77	100	100000

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Semiconductor Device Type: 14 (SAC 105) / WCSP AP				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.214	1.531	15,309
Aluminum	7429-90-5	0.045	0.321	3,206
Titanium	7440-32-6	0.002	0.013	133
Arsenic	7440-38-2	5.17E-09	3.69E-08	3.69E-04
Boron	7440-42-8	7.46E-10	5.33E-09	5.33E-05
Phosphorous	7723-14-0	8.55E-11	6.11E-10	6.11E-06
Copper	7440-50-8	3.53E-03	0.025	252
Polymer	Trade Secret	0.019	0.136	1,359
Silicon	7440-21-3	12.841	91.724	917,240
Tin	7440-31-5	0.862	6.156	61,563
Silver	7440-22-4	0.009	0.063	625
Copper	7440-50-8	0.004	0.031	313
	Totals:	14.0000	100	100000

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Semiconductor Device Type: 16 (SAC 305) / WCSP FB				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.429	1.531	15,309
Aluminum	7429-90-5	0.090	0.321	3,206
Titanium	7440-32-6	0.004	0.013	133
Arsenic	7440-38-2	1.03E-08	3.69E-08	3.69E-04
Boron	7440-42-8	1.49E-09	5.33E-09	5.33E-05
Phosphorous	7723-14-0	1.71E-10	6.11E-10	6.11E-06
Copper	7440-50-8	7.07E-03	0.025	252
Polymer	Trade Secret	0.038	0.136	1,359
Silicon	7440-21-3	25.712	91.724	917,240
Tin	7440-31-5	1.691	6.031	60,313
Silver	7440-22-4	0.053	0.188	1,875
Copper	7440-50-8	0.009	0.031	313
	Totals:	28.03	100	10000

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Semiconductor Device Type: 18 (SAC 105) / WCSP AM				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.418	1.516	15,164
Aluminum	7429-90-5	0.088	0.318	3,176
Titanium	7440-32-6	0.004	0.013	132
Arsenic	7440-38-2	1.01E-08	3.66E-08	3.66E-04
Boron	7440-42-8	1.46E-09	5.28E-09	5.28E-05
Phosphorous	7723-14-0	1.67E-10	6.05E-10	6.05E-06
Copper	7440-50-8	6.90E-03	0.025	250
Polymer	Trade Secret	0.037	0.135	1,346
Silicon	7440-21-3	25.069	90.850	908,504
Tin	7440-31-5	1.902	6.893	68,929
Silver	7440-22-4	0.059	0.214	2,143
Copper	7440-50-8	0.010	0.036	357
	Totals:	27.59	100	1000000

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Semiconductor Device Type: 20 (SAC 105) / WCSP AE				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.465	1.516	15,164
Aluminum	7429-90-5	0.097	0.318	3,176
Titanium	7440-32-6	0.004	0.013	132
Arsenic	7440-38-2	1.12E-08	3.66E-08	3.66E-04
Boron	7440-42-8	1.62E-09	5.28E-09	5.28E-05
Phosphorous	7723-14-0	1.85E-10	6.05E-10	6.05E-06
Copper	7440-50-8	7.66E-03	0.025	250
Polymer	Trade Secret	0.041	0.135	1,346
Silicon	7440-21-3	27.855	90.850	908,504
Tin	7440-31-5	2.157	7.036	70,357
Silver	7440-22-4	0.022	0.071	714
Copper	7440-50-8	0.011	0.036	357
•	Totals:	30.6600	100	1000000

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Semiconductor Device Type: 28 (SAC 105) / WCSP AH				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.314	1.497	14,969
Aluminum	7429-90-5	0.066	0.314	3,135
Titanium	7440-32-6	0.003	0.013	130
Arsenic	7440-38-2	7.58E-09	3.61E-08	3.61E-04
Boron	7440-42-8	1.09E-09	5.21E-09	5.21E-05
Phosphorous	7723-14-0	1.25E-10	5.97E-10	5.97E-06
Copper	7440-50-8	5.18E-03	0.025	247
Polymer	Trade Secret	0.028	0.133	1,329
Silicon	7440-21-3	18.834	89.686	896,857
Tin	7440-31-5	1.724	8.208	82,083
Silver	7440-22-4	0.018	0.083	833
Copper	7440-50-8	0.009	0.042	417
	Totals:	21.00	100	1000000

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Semiconductor Device Type: 32 (SAC 105) / WCS AD				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.629	1.497	14,969
Aluminum	7429-90-5	0.132	0.314	3,135
Titanium	7440-32-6	0.005	0.013	130
Arsenic	7440-38-2	1.52E-08	3.61E-08	3.61E-04
Boron	7440-42-8	2.19E-09	5.21E-09	5.21E-05
Phosphorous	7723-14-0	2.51E-10	5.97E-10	5.97E-06
Copper	7440-50-8	1.04E-02	0.025	247
Polymer	Trade Secret	0.056	0.133	1,329
Silicon	7440-21-3	37.711	89.686	896,857
Tin	7440-31-5	3.451	8.208	82,083
Silver	7440-22-4	0.035	0.083	833
Copper	7440-50-8	0.018	0.042	417
•	Totals:	42.048	100	1000000

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Semiconductor Device Type: 44 (SAC 105) / WCSP AQ				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.071	1.470	14,697
Aluminum	7429-90-5	0.224	0.308	3,078
Titanium	7440-32-6	0.009	0.013	128
Arsenic	7440-38-2	2.58E-08	3.54E-08	3.54E-04
Boron	7440-42-8	3.73E-09	5.11E-09	5.11E-05
Phosphorous	7723-14-0	4.27E-10	5.86E-10	5.86E-06
Copper	7440-50-8	1.76E-02	0.024	242
Polymer	Trade Secret	0.095	0.130	1,305
Silicon	7440-21-3	64.160	88.055	880,550
Tin	7440-31-5	7.177	9.850	98,500
Silver	7440-22-4	0.073	0.100	1,000
Copper	7440-50-8	0.036	0.050	500
•	Totals:	72 86	100	1000000

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Semiconductor Device Type: 48 (SAC 305) / WCSP FC				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.279	1.470	14,697
Aluminum	7429-90-5	0.058	0.308	3,078
Titanium	7440-32-6	0.002	0.013	128
Arsenic	7440-38-2	6.72E-09	3.54E-08	3.54E-04
Boron	7440-42-8	9.70E-10	5.11E-09	5.11E-05
Phosphorous	7723-14-0	1.11E-10	5.86E-10	5.86E-06
Copper	7440-50-8	4.59E-03	0.024	242
Polymer	Trade Secret	0.025	0.130	1,305
Silicon	7440-21-3	16.695	88.055	880,550
Tin	7440-31-5	1.830	9.650	96,500
Silver	7440-22-4	0.057	0.300	3,000
Copper	7440-50-8	0.009	0.050	500
•	Totals:	18.960	100	1000000

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Semiconductor Device Type: 48 (SAC 266) / WCSP AK				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.168	1.470	14,697
Aluminum	7429-90-5	0.245	0.308	3,078
Titanium	7440-32-6	0.010	0.013	128
Arsenic	7440-38-2	2.82E-08	3.54E-08	3.54E-04
Boron	7440-42-8	4.07E-09	5.11E-09	5.11E-05
Phosphorous	7723-14-0	4.66E-10	5.86E-10	5.86E-06
Copper	7440-50-8	1.93E-02	0.024	242
Polymer	Trade Secret	0.104	0.130	1,305
Silicon	7440-21-3	69.993	88.055	880,550
Tin	7440-31-5	7.694	9.680	96,800
Silver	7440-22-4	0.207	0.260	2,600
Copper	7440-50-8	0.048	0.060	600
	Totals	79 4880	100	1000000

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Semiconductor Devi	ce Type: 64 (SAC 305) /	WCSP [PΥ	
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.212	1.429	14,289
Aluminum	7429-90-5	0.254	0.299	2,993
Titanium	7440-32-6	0.011	0.012	124
Arsenic	7440-38-2	2.92E-08	3.44E-08	3.44E-04
Boron	7440-42-8	4.22E-09	4.97E-09	4.97E-05
Phosphorous	7723-14-0	4.83E-10	5.70E-10	5.70E-06
Copper	7440-50-8	2.00E-02	0.024	235
Polymer	Trade Secret	0.108	0.127	1,268
Silicon	7440-21-3	72.586	85.609	856,090
Tin	7440-31-5	10.227	12.063	120,625
Silver	7440-22-4	0.318	0.375	3,750
Copper	7440-50-8	0.053	0.063	625
	Totals:	84 79	100	1000000

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Semiconductor Devi	ce Type: 80 (SAC 305) /	WCSP F	s	
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.082	1.361	13,608
Aluminum	7429-90-5	0.227	0.285	2,850
Titanium	7440-32-6	0.009	0.012	119
Arsenic	7440-38-2	2.61E-08	3.28E-08	3.28E-04
Boron	7440-42-8	3.76E-09	4.74E-09	4.74E-05
Phosphorous	7723-14-0	4.31E-10	5.43E-10	5.43E-06
Copper	7440-50-8	1.78E-02	0.022	224
Polymer	Trade Secret	0.096	0.121	1,208
Silicon	7440-21-3	64.808	81.532	815,324
Tin	7440-31-5	12.784	16.083	160,833
Silver	7440-22-4	0.397	0.500	5,000
Copper	7440-50-8	0.066	0.083	833
	Totals:	79,4880	100	1000000

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Basic Substance CAS Number Sub-Cor Silica, vitreous 60676-86-0 Mold Co Epoxy Resin Trade Secret Mold Co		8 (Lead) MSOP 3x3mm (A3)		nation Base /	•		•	geneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	"	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% ot Total Weight	<u>l</u> t 79.8
		Mold Compound	69.354	17.755	693.542		Silica, vitreous	60676-86-0	86.91	1
		Mold Compound	6.121	1,567	61,207		Epoxy Resin	Trade Secret	7.67	
		Mold Compound	4.078	1.044	40,778		Phenolic Resin	Trade Secret	5.11	1
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314		Carbon Black	Total	100.00	<u>4</u>
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	(mg) Total	Lead Frame	% of Total Weight	t 10.5
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000	2.03	Copper	7440-50-8	95.54	10.5
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.003	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	1
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563			Total	100.00	4
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75.000	0.15	Silver (Ag)	7440-22-4	75	0.73
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	1.965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	n	iglycidylether of bisphenol-F	54208-63-8	8	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.320	12,500		Modified Amine	827-43-0	4	
1111	7440 01 0	TOTALS:	100.000	25.600	1.000.000		Woulled Affilite	Total	·	
			100.000	25.000	1,000,000			rotai		
	comply with EU Directive 2	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and wit	h EU	1.92	Total (mg) Doped Silicon	7440-21-3	% of Total Weight	t 7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ective) and wit	h EU	1.92			100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified nemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this c	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no cred	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer	to the best o	f Microchip Te	echnology	0.05		7440-21-3	100	
tive 2002/53/EC (End-of-Life Vehicle's (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no cred ny regulatory scheme work llammability standard for p	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer	to the best o	f Microchip Te	echnology		Doped Silicon	7440-21-3 Total Wire Bond - Copper, palladium	100	
ctive 2002/53/EC (End-of-Life Vehicle's (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the croproated's knowledge and belief as of the date of this cis not below the threshold of regulatory concern for an iling compounds used by Microchip meet the UL94 V0 fulu.com/global/eng/pages/offerings/industries/chemic:protective "tubes" in which the specific product is ship	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no cred ny regulatory scheme worl lammability standard for p als/plastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity concer d-wide.	to the best on tration of the obtain a test	f Microchip To chemical sub t report at	echnology ostance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the ship child compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the UL94 V0 for child compounds used by Microchip meet the UL94 V0 for child compounds when the specific product is ship ain "reels" may be made from PVC plastic. To chip Technology Incorporated believes the information corporated believes the informatic corporated believes corporated believes corporated believes corporated	comply with EU Directive 2 via internal design contro hemical substance is NOT homologies in the control graph of the control lammability standard for pals/plastics/ opped are made from polyvi on in this form concerning test of its knowledge and by has been compiled based rets and some information oursts and the average weig	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. Ilastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology Ir elilef, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro inay not have been provided by subcontract assemblers a tht of anticipated significant toxic metals components. The	to the best o ntration of the o obtain a test ld the packing ecorporated's y Incorporate y deed by raw r ind raw mater	f Microchip To chemical sub t report at g slip on the c semiconduct d cannot gua naterial suppliers.	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	t 0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). appliance with the above EU Directives has been verified chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this corporated's knowledge and belief as of the date of this corporated's knowledge and belief as of the date of this corporated's knowledge and belief as of the UL94 V0 for the second of the UL94 V0 for the	comply with EU Directive 2 I via internal design contro hemical substance is NOT locument, there is no cred by regulatory scheme worl lammability standard for pals/plastics/ opped are made from polyvi on in this form concerning test of its knowledge and be has been compiled based tests and some information parts and the average weig tin silicon devices (silicon varranty, express or implie	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. Ilastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology Ir elilef, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro inay not have been provided by subcontract assemblers a tht of anticipated significant toxic metals components. The	to the best of the contraction of the contraction. The exclusion.	f Microchip To chemical sub t report at g slip on the c semiconduct d cannot gua material suppl ial suppliers. do not include	echnology istance, if outer box and or devices in rantee the iers. Supplier Information is trace levels		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	t 0.2
pliance with the above EU Directives (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the crporated's knowledge and belief as of the date of this cris not below the threshold of regulatory concern for arising compounds used by Microchip meet the UL94 V0 I/Vul.com/global/eng/pages/offerings/industries/chemiciprotective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. Onchip Technology Incorporated believes the informationignal packing materials is true and correct to the bepleteness and accuracy of data in this form because it mation is often protected from disclosure as trade secided only as estimates of the average weight of these popants, metals, and non-metal materials contained with onchip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	comply with EU Directive 2 I via internal design contro hemical substance is NOT locument, there is no cred to regulatory scheme worl lammability standard for pals/plastics/ opped are made from polyvi on in this form concerning test of its knowledge and be has been compiled based tests and some information parts and the average weig tin silicon devices (silicon varranty, express or implied and its subsidiaries are ce changes to Material Conte he users' reliance on the in	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. Diastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro unay not have been provided by subcontract assemblers a the of anticipated significant toxic metals components. The IC) in the finished parts. Icd, with respect to the information provided in this declarate.	to the best of the bottom of the bottom of the bottom obtain a test of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the	f Microchip To chemical subtraction of the control	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.05	Doped Silicon (mg) Total Copper Palladium	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2	0.2
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the criporated's knowledge and belief as of the date of this criporated's knowledge and belief as of the date of this criporated's knowledge and belief as of the date of this criporated is not below the threshold of regulatory concern for arriving compounds used by Microchip meet the UL94 V0 fiful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Orchip Technology Incorporated believes the information original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade secided only as estimates of the average weight of these popants, metals, and non-metal materials contained with orchip Technology Incorporated does not provide any vanties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. Orchip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of the selection o	comply with EU Directive 2 I via internal design contro hemical substance is NOT locument, there is no cred to regulatory scheme worl lammability standard for pals/plastics/ opped are made from polyvi on in this form concerning test of its knowledge and be has been compiled based tests and some information parts and the average weig tin silicon devices (silicon varranty, express or implied and its subsidiaries are ce changes to Material Conte he users' reliance on the in	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity concerd-wide. Islastics. You can access the UL iQTM family of databases to lastics. You can access the UL iQTM family of databases to lastics. You can access the UL iQTM family of databases to lastics. You can access the UL iQTM family of databases to lastics. You can access the UL iQTM family of databases to lastics. You can access the UL iQTM family of databases to lastic acceptance (PVC) plastic. "Window envelopes" used to how substances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technology on the ranges provided in haterial Safety Data Sheets provided by subcontract assemblers a plat of anticipated significant toxic metals components. The IC) in the finished parts. It is in the finished parts. It is in the finished parts. It is in the finished parts in the finished in this declarated ontained in Microchip's standard terms and conditions of the part of the provided in this declarated the provided in this declaration that the provided in this decla	to the best of the bottom of the bottom of the bottom obtain a test of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the bottom obtains a test of the bottom of the	f Microchip To chemical subtraction of the control	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.05	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	t 0.2

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MICROCHIP Semiconductor Device Typ	e: PandPA 8 (Lead) PDIP (Small Outline300") (C4 / CK)		ation Base A			•	geneous Materials: _I . pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	300.33		•	•	75.5
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin SiO2	Trade Secret 14808-60-7	Mold Compound Mold Compound	5.586 1.995	27.187 9.710	55,860 19,950		Phenol Resin SiO2	Trade Secret 14808-60-7	7.00 2.50	
SIO2 Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	
	7440-50-8	Lead Frame	10.031	48.823	100.314		Carbon Black	1333-86-4 Total		
Copper Iron	7439-89-6	Lead Frame	0.247	1.201	2,468	51.10		Lead Frame	% of Total Weight	10.5
				0.974		51.10	(mg) Total			10.5
Silver Zinc	7440-22-4 7440-66-6	Lead Frame Lead Frame	0.200	0.974	2,000		Copper	7440-50-8 7439-89-6	95.54 2.35	
Zinc Phosphorous	7723-14-0	Lead Frame Lead Frame	0.013	0.064	87		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Silver	7440-22-4	Die Attach	0.009	2.678	5,502			7440-22-4	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.550	0.535	1,100		Zinc Phosphorous	7723-14-0	0.13	
Diluent	3101-60-8	Die Attach	0.055	0.333	550		Filospilolous	Total		
Phenolic hardener	Trade secret	Die Attach	0.055	0.200	220	2.05	() T-4-I			0.75
	827-43-0	Die Attach	0.022	0.107	110	3.65	(mg) Total	Die Attach 7440-22-4	% of Total Weight	0.75
Amine type hardener	827-43-0 461-58-5	Die Attach	0.011	0.054	110				73.36 14.67	
Dicyandiamide Silicon	7440-21-3	Chip (Die)	7.500	36,503	75.000		Epoxy Resin Diluent	3101-60-8	7.33	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1.965		Phenolic hardener		2.93	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd) Wire Bond palladium coated copper (CuPd)	0.004	0.930	35		Amine type hardener		1.47	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Dicyandiamide		0.24	
1111	7440 01 0	TOTALS:	100.000	486.700	1,000,000		Dicyandiamide	Total	100.00	
	0.4007		100.000	400.700	1,000,000	36.50	Total (mg)	Chip (Die)	% of Total Weight	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and with	n EU	00.00	Doped Silicon	7440-21-3	100	
Compliance with the above EU Directives has been verified via int	ternal design contro	els, supplier declarations, and /or analytical test data.						Total	100.00	
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this docume any, is not below the threshold of regulatory concern for any regulatory.	ent, there is no cred	ible reason to believe that the unavoidable impurity concen				0.97	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weigh	0.2
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/plas		plastics. You can access the UL iQTM family of databases to	o obtain a test	report at			Copper	7440-50-8		
	31.00/						Ооррог	7440 30 0	98	
The protective "tubes" in which the specific product is shipped ar certain "reels" may be made from PVC plastic.		nyl chloride (PVC) plastic. "Window envelopes" used to ho	ld the packing	slip on the o	uter box and		Palladium	7440-05-3	98	
certain "reels" may be made from PVC plastic.	re made from polyvi			•					2	
certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in the their original packing materials is true and correct to the best of it completeness and accuracy of data in this form because it has be	re made from polyvi nis form concerning ts knowledge and be een compiled based	substances restricted by RoHS in Microchip Technology In blief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov	ncorporated's ly Incorporate vided by raw n	semiconducto d cannot guar naterial suppli	or devices in cantee the iers. Supplier			7440-05-3	2	
certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in the their original packing materials is true and correct to the best of it	re made from polyvinis form concerning ts knowledge and been compiled based and some information and the average weig	substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov in may not have been provided by subcontract assemblers a thit of anticipated significant toxic metals components. Thes	ncorporated's ly Incorporate vided by raw n and raw mater	semiconducto d cannot guar naterial suppli al suppliers. I	or devices in antee the iers. Supplier nformation is			7440-05-3	2	
certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in th their original packing materials is true and correct to the best of it completeness and accuracy of data in this form because it has be information is often protected from disclosure as trade secrets an provided only as estimates of the average weight of these parts a	re made from polyvi his form concerning is knowledge and be en compiled based and some information and the average weig con devices (silicon ty, express or implie	substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov in may not have been provided by subcontract assemblers a thit of anticipated significant toxic metals components. The IC) in the finished parts.	ncorporated's ly Incorporate rided by raw n and raw mater se estimates o	semiconducto d cannot guar naterial suppli al suppliers. I lo not include sive, limited p	or devices in rantee the iers. Supplier information is trace levels	6.08		7440-05-3	2	
certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in th their original packing materials is true and correct to the best of it completeness and accuracy of data in this form because it has be information is often protected from disclosure as trade secrets an provided only as estimates of the average weight of these parts a of dopants, metals, and non-metal materials contained within silic Microchip Technology Incorporated does not provide any warrant warranties provided by Microchip Technology Incorporated and it	re made from polyving is from concerning is knowledge and by the no compiled based at some information and the average weigh con devices (silicon ty, express or implies subsidiaries are coes to Material Conte	substances restricted by RoHS in Microchip Technology In a so of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a thit of anticipated significant toxic metals components. Thes IC) in the finished parts. ad, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s int Declarations and shall not be liable for any damages, dir	icorporated's y Incorporate vided by raw in and raw mater se estimates of the control of the con	semiconducto d cannot guar naterial suppli al suppliers. I lo not include sive, limited p e provided in l	or devices in antee the lers. Supplier nformation is trace levels product Microchip's	6.08	Palladium	7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	2 100.000 % of Total Weight	
certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in the their original packing materials is true and correct to the best of it completeness and accuracy of data in this form because it has be information is often protected from disclosure as trade secrets an provided only as estimates of the average weight of these parts as of dopants, metals, and non-metal materials contained within silic Microchip Technology Incorporated does not provide any warrant warranties provided by Microchip Technology Incorporated and it quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the use	re made from polyving is from concerning is knowledge and by the no compiled based at some information and the average weigh con devices (silicon ty, express or implies subsidiaries are coes to Material Conte	substances restricted by RoHS in Microchip Technology In a so of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a thit of anticipated significant toxic metals components. Thes IC) in the finished parts. ad, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s int Declarations and shall not be liable for any damages, dir	icorporated's y Incorporate vided by raw in and raw mater se estimates of the control of the con	semiconducto d cannot guar naterial suppli al suppliers. I lo not include sive, limited p e provided in l	or devices in antee the lers. Supplier nformation is trace levels product Microchip's	6.08	Palladium (mg) Total	7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2 100.00 % of Total Weight	

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Semiconductor Device							s)	JEDEC 97 Product Markir and/or Pkg. Labeling e3		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	62.24	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	4.774	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	3.181	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314			Total	100.00	•
Iron	7439-89-6	Lead Frame	0.247	0.192	2,468	8.19	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.010	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563			Total		
Modified Amine	827-43-0	Die Attach	0.026	0.020	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000		Silver (Ag)		75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.153	1,965		Modified Epoxy Resir		14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.003	35		Diglycidylether of bisphenol-F	54208-63-8	8	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500		Modified Amine		4	
		TOTALS:	100.000	78.000	1,000,000			Total	100.00	
	comply with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH				5.85	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH				5.85		Chip (Die)	% of Total Weight	7.5
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ci orated's knowledge and belief as of the date of this d	via internal design control hemical substance is NOT locument, there is no cred	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer	IS Recast Dire	ective) and wit	h EU	0.16		Chip (Die) 7440-21-3	% of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified the service of the list above, the classified of the list above, the classified of the date of this distributed in the list above, the classified of the date of this distributed of the list above the threshold of regulatory concern for an	via internal design control hemical substance is NOT locument, there is no cred by regulatory scheme work	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer	IS Recast Dire	ective) and wit f Microchip Te chemical sub	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified the mical substance is absent from the list above, the classification of the date of this does not below the threshold of regulatory concern for an ang compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemical.	via internal design control hemical substance is NOT locument, there is no cred by regulatory scheme work lammability standard for pals/plastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 2015, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity concer d-wide.	IS Recast Dire	ective) and wit of Microchip Te ochemical sub t report at	h EU echnology sstance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the clorated's knowledge and belief as of the date of this of anot below the threshold of regulatory concern for an ang compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemicatorective "tubes" in which the specific product is shipn "reels" may be made from PVC plastic.	via internal design control via internal design control hemical substance is NOT locument, there is no cred ny regulatory scheme worl lammability standard for p als/plastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. olastics. You can access the UL iQTM family of databases t myl chloride (PVC) plastic. "Window envelopes" used to ho	IS Recast Directly to the best on the best on the best on the best of the best	octive) and with the following the chemical subtractions to report at the control of the control	h EU echnology sstance, if outer box and		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified temical substance is absent from the list above, the cloorated's knowledge and belief as of the date of this of s not below the threshold of regulatory concern for ar ang compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. chip Technology Incorporated believes the information rotecting materials is true and correct to the beleteness and accuracy of data in this form because it nation is often protected from disclosure as trade sec- led only as estimates of the average weight of these p	via internal design control memical substance is NOT locument, there is no cred by regulatory scheme work lammability standard for pals/plastics/ oped are made from polyvi m in this form concerning lest of its knowledge and b has been compiled based rets and some information parts and the average weig	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. olastics. You can access the UL iQTM family of databases t myl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro in may not have been provided by subcontract assemblers a pht of anticipated significant toxic metals components. The	IS Recast Directly to the best of the best	of Microchip Telephone treport at g slip on the constructed cannot gual material suppliers.	h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
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ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the clorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for an ang compounds used by Microchip meet the UL94 V0 full.com/global/eng/pages/offerings/industries/chemics rotective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information in the protected from disclosure as trade see ted only as estimates of the average weight of these plants, metals, and non-metal materials contained with thip Technology Incorporated does not provide any wittes provided by Microchip Technology Incorporated into sporvide and with the provided by Microchip Technology Incorporated in the sporvide of the average weight of these plants, metals, and incorporated does not provide any wittes provided by Microchip Technology Incorporated incorporated in the sporvide of the average weight of these plants, metals, and incorporated does not provide any wittes provided by Microchip Technology Incorporated incorporated incorporated in the sporvide in the provided and invoices.	via internal design control hemical substance is NOT locument, there is no cred by regulatory scheme worl lammability standard for pals/plastics/ oped are made from polyvi on in this form concerning list of its knowledge and be has been compiled based rets and some information arts and the average weig in silicon devices (silicon varranty, express or implied I and its subsidiaries are conchanges to Material Conte he users' reliance on the i	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ols, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. olastics. You can access the UL iQTM family of databases t myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro int of anticipated significiant toxic metals components. The IC) in the finished parts. ed, with respect to the information provided in this declarat	IS Recast Director in the best of the best	of Microchip Te chemical subtraction of the common of the	h EU echnology stance, if or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.16	Opped Silicon (mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin /	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the clorated's knowledge and belief as of the date of this denoted in the list above, the clorated's knowledge and belief as of the date of this denoted in the list above, the clorated's knowledge and belief as of the date of this denoted in the list above, the clorated in the list above, the clorated in the list above, the list and compounds used by Microchip meet the UL94 V0 full. com/global/eng/pages/offerings/industries/chemical other in the list and under the list and list and the specific product is ship a "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information riginal packing materials is true and correct to the betteness and accuracy of data in this form because it attains is often protected from disclosure as trade sected only as estimates of the average weight of these pants, metals, and non-metal materials contained with the provided by Microchip Technology Incorporated does not provide any values provided by Microchip Technology Incorporated in the provided by Microchip Techno	via internal design control hemical substance is NOT locument, there is no cred by regulatory scheme worl lammability standard for pals/plastics/ oped are made from polyvi on in this form concerning list of its knowledge and be has been compiled based rets and some information arts and the average weig in silicon devices (silicon varranty, express or implied I and its subsidiaries are conchanges to Material Conte he users' reliance on the i	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 2015), supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. 2015) 2015 2	IS Recast Director in the best of the best	of Microchip Te chemical subtraction of the common of the	h EU echnology stance, if or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.16	Doped Silicon (mg) Total Copper Palladium (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external lead: (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	0.2

OA SN 08 SOIC 3:39 PM : 8/7/2012

CROCHIP				nation Base /	,		•	geneous Materials: g. pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: SM 08 (Lead) S	OIJ (Small Outline-208 mil) (C3)								
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	99.27	(mg) Total	Mold Compound	% ot Total Weigh	t 79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	86,277	693,542		Silica, vitreous	60676-86-0	86.91	1
Epoxy Resin	Trade Secret	Mold Compound	6.121	7.614	61,207		Epoxy Resin	Trade Secret	7.67	1
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.073	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.308	2.474		Carbon Black	1333-86-4	0.31	1
Copper	7440-50-8	Lead Frame	10.031	12,479	100,314		Carbon Black	Total	0.0.	<u>-</u>
Iron	7439-89-6	Lead Frame	0.247	0.307	2.468	13.06	(mg) Total	Lead Frame	% of Total Weigh	
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000	13.00		7440-50-8	95.54	10.5
Zinc	7440-22-4	Lead Frame	0.200	0.249	131		Copper	7440-50-8 7439-89-6		
							Iron		2.35	4
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4 13561-08-5	Die Attach	0.563 0.105	0.700 0.131	5,625		Zinc	7440-66-6	0.13 0.08	
Modified Epoxy Resin		Die Attach			1,050		Phosphorous	7723-14-0		Ţ
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563			Total		
Modified Amine	827-43-0	Die Attach	0.026	0.033	263	0.93	(mg) Total	Die Attach	% of Total Weigh	t 0.75
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000		Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.244	1,965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.004	35		Diglycidylether of bisphenol-F	54208-63-8	8	
Tin	7440-31-5 Pla	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500		Modified Amine		4	
		TOTALS:	100.000	124.400	1,000,000			Total	100.00)
	0.1244 g	Total Mass				9.33				
		2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and wit	h EU	9.33	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weigh	t 7.5
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified nical substance is absent from the list above, the ch	comply with EU Directive 200 via internal design controls, nemical substance is NOT an	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and	, to the best o	f Microchip Te	echnology		Doped Silicon	7440-21-3 Total Wire Bond -	100.00	
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified nical substance is absent from the list above, the clared's knowledge and belief as of the date of this dot below the threshold of regulatory concern for an	via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-w	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer	, to the best o	f Microchip Te chemical sub	echnology	0.25	1	7440-21-3 Total	100	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the che rated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for an grompounds used by Microchip meet the UL94 V0 fi	comply with EU Directive 200 via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-w lammability standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer	, to the best o	f Microchip Te chemical sub	echnology		Doped Silicon	7440-21-3 Total Wire Bond - Copper, palladium	100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the charted's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fil. Loom/global/eng/pages/offerings/industries/chemica btective "tubes" in which the specific product is ship	comply with EU Directive 200 via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-w lammability standard for plas ils/plastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer	, to the best ontration of the	f Microchip To chemical sub t report at	echnology sstance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.0i % of Total Weigh	0.2
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the charted's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fl. Loom/global/eng/pages/offerings/industries/chemica bective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. hip Technology Incorporated believes the informatio iginal packing materials is true and correct to the be teness and accuracy of data in this form because it in this often protected from disclosure as trade sected only as estimates of the average weight of these p	via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-wammability standard for plastis/plastics/ ped are made from polyvinyl in in this form concerning sul st of its knowledge and belie has been compiled based on rets and some information marts and the average weight	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concertide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he constances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provuled in waterial Safety Data Sheets provuled have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	, to the best o ntration of the o obtain a test old the packing ncorporated's yJ Incorporate vided by raw r and raw mater	f Microchip To chemical sub treport at g slip on the co semiconduct d cannot gua material suppliers.	echnology istance, if outer box and or devices in rantee the iers. Supplier information is		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	100 100.0i % of Total Weigh	0.2
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the charted's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fl.com/global/eng/pages/offerings/industries/chemicatective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. Inip Technology Incorporated believes the informatio gignal packing materials is true and correct to the beteness and accuracy of data in this form because it it tion is often protected from disclosure as trade sected only as estimates of the average weight of these pints, metals, and non-metal materials contained with hip Technology Incorporated does not provide any wites provided by Microchip Technology Incorporated to the provide of the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provide and the provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorpo	via internal design controls, nemical substance is NOT an occument, there is no credible y regulatory scheme world-watermability standard for plastis/plastics/ uped are made from polyvinyl an in this form concerning sulst of its knowledge and belie has been compiled based on rets and some information marts and the average weight in silicon devices (silicon IC)	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concertide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he constances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provuled in waterial Safety Data Sheets provuled have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best on tration of the oo obtain a test old the packing accorporated's gy Incorporate vided by raw rand raw mater see estimates of the occurrence of	f Microchip To chemical sub treport at g slip on the c semiconduct d cannot gua naterial suppli ial suppliers. do not include usive, limited i	postance, if puter box and or devices in rantee the iers. Supplier information is e trace levels		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.0i % of Total Weigh	0.2
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the character's knowledge and belief as of the date of this directives has been verified emical substance is absent from the list above, the character's knowledge and belief as of the date of this directive in the threshold of regulatory concern for an given common content of the complete o	via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-w lammability standard for plas lis/plastics/ pped are made from polyvinyl in in this form concerning sul st of its knowledge and belie has been compiled based on rets and some information marts and the average weight in silicon devices (silicon IC) varranty, express or implied, and its subsidiaries are conceptanges to Material Content the users' reliance on the info	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity concertide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he constances restricted by RoHS in Microchip Technology In f., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets proy not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts.	to the best on tration of the oo obtain a test old the packing the occupant of the packing	f Microchip To chemical sub treport at g slip on the of semiconduct d cannot gua naterial suppliad ial suppliers. do not include usive, limited i e provided in	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.25	Doped Silicon (mg) Total Copper Palladium	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	98 2 100.00	0.2
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iance with the above EU Directives has been verified emical substance is absent from the list above, the character's knowledge and belief as of the date of this donot below the threshold of regulatory concern for an goompounds used by Microchip meet the UL94 V0 fil. I.com/global/eng/pages/offerings/industries/chemicatotective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information in the process and accuracy of data in this form because it thation is often protected from disclosure as trade sected only as estimates of the average weight of these pants, metals, and non-metal materials contained with thip Technology Incorporated does not provide any we ties provided by Microchip Technology Incorporated ons, sales order acknowledgement, and invoices. Thip disclaims any duty to notify users of updates or dise, suffered by users or third parties as a result of the suffered b	via internal design controls, nemical substance is NOT an ocument, there is no credible y regulatory scheme world-w lammability standard for plas lis/plastics/ pped are made from polyvinyl in in this form concerning sul st of its knowledge and belie has been compiled based on rets and some information marts and the average weight in silicon devices (silicon IC) varranty, express or implied, and its subsidiaries are conceptanges to Material Content the users' reliance on the info	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concertide. titics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he constances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provided in Material Safety Data Sheets provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarate tained in Microchip's standard terms and conditions of subcelarations and shall not be liable for any damages, diese and several conditions and shall not be liable for any damages, diese and several cannot be supposed to the liable for any damages, diese and several cannot be supposed to the supposed terms and conditions of supposed to the supposed terms and conditions of supposed terms and shall not be liable for any damages, diese and supposed terms and conditions and shall not be liable for any damages, diese and supposed terms and conditions and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages, diese and supposed terms and shall not be liable for any damages.	to the best on tration of the oo obtain a test old the packing the occupant of the packing	f Microchip To chemical sub treport at g slip on the of semiconduct d cannot gua naterial suppliad ial suppliers. do not include usive, limited i e provided in	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product Microchip's	0.25	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	ot 0.2

SM 8 SOIJ_SOIC 3:39 PM : 8/7/2012

Semiconductor Device	Type: CT OT 05	(Last) SOT 22 (cm)		nation Base /	,		•	geneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: Cland Ol 05	, ,						_		es
5 . 6		"Contained In"	% Total			12.77	(mg) Total	Mold Compound	% ot Total Weigh	t 79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				Ţ.	-
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.097	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	0.979	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	0.652	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.040	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468	1.68	(mg) Total	Lead Frame	% of Total Weigh	t 10.5
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563			Total	100.00	7
Modified Amine	827-43-0	Die Attach	0.026	0.004	263	0.12	(mg) Total	Die Attach	% of Total Weigh	t 0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000		Silver (Ag	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.031	1.965		Modified Epoxy Resi	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	D	iglycidylether of bisphenol-	54208-63-8	8	
Tin		ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.200	12,500		Modified Amine	827-43-0	4	
		TOTALS:	100.000	16.000	1.000.000			Total	100.00	3
	0.0400	Total Mass	.00.000		.,000,000	1.20	Total (mg)	Chip (Die)	% of Total Weigh	
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified v		2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	o Necast Dire	ctive, and wit			Doped Silicon	7440-21-3 Total	100]
mical substance is absent from the list above, the che	emical substance is NOT an								100.00	
• • •	regulatory scheme world-v	e reason to believe that the unavoidable impurity concervide.	ntration of the	chemical sub		0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weigh	
compounds used by Microchip meet the UL94 V0 fla	regulatory scheme world-v	e reason to believe that the unavoidable impurity concer	ntration of the	chemical sub		0.03	(mg) Total Copper	Wire Bond - Copper, palladium		
Il.com/global/eng/pages/offerings/industries/chemicals	regulatory scheme world-v ammability standard for plas s/plastics/	e reason to believe that the unavoidable impurity concervide.	ntration of the	chemical sub	ostance, if	0.03		Wire Bond - Copper, palladium coated (CuPd)	% of Total Weigh	
g compounds used by Microchip meet the UL94 V0 fla Il.com/global/eng/pages/offerings/industries/chemicals otective "tubes" in which the specific product is shipp "reels" may be made from PVC plastic. thip Technology Incorporated believes the information riginal packing materials is true and correct to the bese tetness and accuracy of data in this form because it his ation is often protected from disclosure as trade secre	regulatory scheme world-v immability standard for plas s/plastics/ led are made from polyviny in this form concerning su t of its knowledge and belie as been compiled based on its and some information m irts and the average weight	e reason to believe that the unavoidable impurity concerded. stics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to be bestances restricted by RoHS in Microchip Technology Ir f, as of the date listed in this form. Microchip Technolog the ranges provided in Material Safety Data Sheets proy not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	o obtain a test old the packing ncorporated's gy Incorporate vided by raw r and raw mater	chemical sub report at g slip on the c semiconduct d cannot gua naterial suppliers.	outer box and or devices in rantee the liers. Supplier Information is	0.03	Copper	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weigh	
g compounds used by Microchip meet the UL94 V0 fla al.com/global/eng/pages/offerings/industries/chemicals otective "tubes" in which the specific product is shipp "reels" may be made from PVC plastic. thip Technology Incorporated believes the information riginal packing materials is true and correct to the besi eteness and accuracy of data in this form because it hat attion is often protected from disclosure as trade sere ed only as estimates of the average weight of these pa ants, metals, and non-metal materials contained within thip Technology Incorporated does not provide any wa	regulatory scheme world-vimmability standard for plass/plastics/ led are made from polyviny in this form concerning su t of its knowledge and belie as been compiled based on tts and some information m trs and the average weight a silicon devices (silicon IC)	e reason to believe that the unavoidable impurity concerded. stics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to be bestances restricted by RoHS in Microchip Technology Ir f, as of the date listed in this form. Microchip Technolog the ranges provided in Material Safety Data Sheets proy not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	ntration of the oobtain a test old the packing occuporated's by Incorporate vided by raw nater as estimates of the occupon. The exclusion. The exclusion of the occupon occupon occupant occupon occupant occupon occupon occupant occupon occupon occupant occupant occupon occupon occupant occupon occupant	chemical sub report at g slip on the c semiconduct d cannot gua naterial suppliers do not include usive, limited	outer box and or devices in rantee the ilers. Supplier information is trace levels	0.03	Copper	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weigh 98 2 100.00	t 0.2
g compounds used by Microchip meet the UL94 V0 flat al.com/global/eng/pages/offerings/industries/chemicals otective "tubes" in which the specific product is shipp "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information riginal packing materials is true and correct to the besteness and accuracy of data in this form because it hation is often protected from disclosure as trade secreed only as estimates of the average weight of these pants, metals, and non-metal materials contained within thip Technology Incorporated does not provide any was ties provided by Microchip Technology Incorporated a ions, sales order acknowledgement, and invoices.	regulatory scheme world-vammability standard for plas s/plastics/ led are made from polyviny in this form concerning su to fits knowledge and belie as been compiled based on the sand some information mirts and the average weight in silicon devices (silicon IC) arranty, express or implied, and its subsidiaries are containing to Material Content to users' reliance on the info	e reason to believe that the unavoidable impurity concervide. stics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to be bestances restricted by RoHS in Microchip Technology Ir f, as of the date listed in this form. Microchip Technolog the ranges provided in Material Safety Data Sheets proy not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat	o obtain a test of the packing ncorporated's y Incorporate vided by raw r and raw mater se estimates cion. The exclusale. These ar	chemical sub report at g slip on the c semiconduct d cannot gua naterial supplial suppliers. do not include sieve, limited in e provided in t, consequent	outer box and or devices in rantee the liers. Supplier Information is e trace levels product Microchip's		Copper Palladium	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weigh 98 2 100.00	t 0.2

CT OT 5 SOT-23 3:39 PM : 8/7/2012

CROCHIP				nation Base / pper Alloy (C	,		•	ogeneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: CH and OT 06									e3
		"Contained In"	% Total			40.57	, , , , , ,			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% ot Total Weigh	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.790	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	1.041	61,207		Epoxy Resin	Trade Secret	7.67	1
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	0.693	40,778		Phenolic Resin	Trade Secret	5.11	1
Carbon Black	1333-86-4	Mold Compound	0.247	0.042	2,474		Carbon Black	1333-86-4	0.31	1
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	1.79	(mg) Total	Lead Frame	% of Total Weigh	t 10.5
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000	0	Copper	7440-50-8	95.54	10.0
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	ł
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	ł
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625		Zinc	7440-66-6	0.13	i
Silicon dioxide	Trade Secret	Die Attach	0.565	0.096	1,688		Phosphorous	7723-14-0	0.13	ł
Ollicori dioxide	Polymeric Retanning	DIE Allacii	0.103	0.023	1,000		Filospilolods	7723-14-0 Total		4
Curing / Hardener	Agent	Die Attach	0.019	0.003	188			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	1,275	75,000	0.13	(mg) Total	Die Attach	% of Total Weigh	t 0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.033	1.965		Epoxy resin	Trade Secret	75	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.000	35		Silicon dioxide	7631-86-9	23	
Tin		ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500		Curing / Hardener	Trade Secret	3	ł
	7440 01 0 11			17.000	1.000.000		Odning / Hardener			<u> </u>
		TOTAL C.								
		TOTALS:	100.000	17.000	1,000,000			Total		
		Total Mass				1.28	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weigh	7.5
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via int	with EU Directive 200	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data.	dS Recast Dire	ective) and wit	h EU	1.28		Chip (Die)	% of Total Weigh	7.5
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified via int nical substance is absent from the list above, the chemica ated's knowledge and belief as of the date of this docume	with EU Directive 200 ternal design controls, al substance is NOT an ent, there is no credible	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and ereason to believe that the unavoidable impurity concer	IS Recast Dire	ective) and wit	h EU	0.03		Chip (Die) 7440-21-3	% of Total Weigh	7.5
e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified via int nical substance is absent from the list above, the chemica ated's knowledge and belief as of the date of this docume ot below the threshold of regulatory concern for any regulatory concern for any regulatory under the UL94 V0 flamma	with EU Directive 200 dernal design controls, al substance is NOT an ent, there is no credible alatory scheme world-w ability standard for plas	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity conceivide.	IS Recast Dire	f Microchip Te	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weigh	7.5
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via intermical substance is absent from the list above, the chemical substance is absent from the list above, the chemical rated's knowledge and belief as of the date of this docume not below the threshold of regulatory concern for any regulation of the form of the substance of the substan	with EU Directive 200 dernal design controls, al substance is NOT an ent, there is no credible alatory scheme world-v ubility standard for plas stics/	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity conceivide. stics. You can access the UL iQTM family of databases to	IS Recast Dire	f Microchip Te chemical sub t report at	h EU echnology sstance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	% of Total Weigh 100 100.00 % of Total Weigh	7.5
emiconductor device and its homogenous materials comply ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via intermical substance is absent from the list above, the chemical orated's knowledge and belief as of the date of this docume not below the threshold of regulatory concern for any regular compounds used by Microchip meet the UL94 V0 flamma al.com/global/eng/pages/offerings/industries/chemicals/plastotective "tubes" in which the specific product is shipped an "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information in the riginal packing materials is true and correct to the best of it eteness and accuracy of data in this form because it has be ation is often protected from disclosure as trade secrets and only as estimates of the average weight of these parts at ants, metals, and non-metal materials contained within silic	with EU Directive 200 ternal design controls, al substance is NOT an ent, there is no credible latory scheme world-v ability standard for plas stics/ the made from polyviny is form concerning su is knowledge and belie en compiled based on and some information m and the average weight	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity conceivide. stics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he be stances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets proy not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	IS Recast Dire I, to the best ontration of the so obtain a test old the packing ncorporated's gy Incorporate vided by raw r and raw mater	f Microchip Te chemical subtractions of the control	h EU echnology stance, if outer box and or devices in rantee the liers. Supplier Information is		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weigh 100 100.00 % of Total Weigh 98	0.2
we 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via intermical substance is absent from the list above, the chemical orated's knowledge and belief as of the date of this docume not below the threshold of regulatory concern for any regular or good of the date of this docume of the decimal of	with EU Directive 200 dernal design controls, al substance is NOT an ent, there is no credible latery scheme world-w bibility standard for plas stics/ re made from polyviny is form concerning su is knowledge and belie en compiled based on d some information m and the average weight con devices (silicon Ic) ty, express or implied, s subsidiaries are con	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity conceivide. stics. You can access the UL iQTM family of databases to the chloride (PVC) plastic. "Window envelopes" used to be bestances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarated in Microchip's standard terms and conditions of the supplementations.	IS Recast Dire I, to the best o intration of the co obtain a test old the packing incorporated's gy Incorporate vided by raw r and raw mater ese estimates of tion. The exclusiale. These ar	f Microchip Te chemical subtreport at g slip on the constructed cannot guaranterial supplial suppliers. do not include usive, limited pe provided in	h EU achnology stance, if buter box and or devices in rantee the liers. Supplier Information is e trace levels product Microchip's		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weigh 100 100.00 % of Total Weigh 98	0.2
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via intemical substance is absent from the list above, the chemical orated's knowledge and belief as of the date of this docume not below the threshold of regulatory concern for any regulation of the list of the second of the seco	with EU Directive 200 dernal design controls, al substance is NOT an ent, there is no credible latory scheme world-w ability standard for plas stics/ er made from polyviny dis form concerning su is knowledge and belie en compiled based on de some information m de the average weight con devices (silicon IC) sy, express or implied, s subsidiaries are con es to Material Content	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity conceivide. stics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to be betances restricted by RoHS in Microchip Technology Inf., as of the date listed in this form. Microchip Technology Inf. as of the date listed in this form. Microchip Technology Inf. are provided in Microchip Technology Inf. are provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat tained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, di	IS Recast Dire I, to the best ontration of the co obtain a test bold the packing ncorporated's gy Incorporate vided by raw rand raw mater use estimates of tion. The exclusiale. These ar	f Microchip To chemical subt report at g slip on the consequent suppliers. do not include usive, limited perovided in tt, consequent tt, consequent	h EU echnology stance, if outer box and or devices in rantee the iters. Supplier Information is trace levels product Microchip's	0.03	Doped Silicon (mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total	% of Total Weigh 100 100.00 % of Total Weigh 98 2 100.00 % of Total Weigh	0.2

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